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Gender Grouping and its Initial Effect on a Title I Upper Elementary School during the Pilot Year of Implementation

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By

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Studies have documented challenges in meeting No Child Left Behind (NCLB) expectations as well as gender differences that contribute to the achievement gaps between boys and girls. In response to increased NCLB accountability and achievement gaps between boys and girls, several experts have promoted single-sex education as a possible strategy to improving student achievement.

The purpose of this study was to examine data that were gathered from an economically disadvantaged Title I federally-assisted upper elementary school with respect to the implementation of single-gender classrooms. This study was guided by the following two research questions: First, what were the perspectives from teachers, students, and parents with the initial year of implementation of single-gender classrooms? Second, what school level data could be analyzed and summarized with respect to student behaviors during the initial year of implementation?

Unlike previous studies, which focused on private or parochial schools at the secondary school level, this study focused on an economically disadvantaged school within an upper elementary setting. In addition, limited previous research has examined

the perspectives of teachers, students, and parents. As research continues to show an ever-increasing achievement gap between students in poverty and those who are not, many educators seek alternative ways to educate students in economically disadvantaged schools. While single-gender classrooms are by no means a cure-all for the adversity faced by disadvantaged students in public schools, an analysis of the aforementioned research data indicated salient benefits for such students in that they can provide a learning environment where affective and cognitive learning outcomes could be realized.

The results from this study revealed that teachers and parents considered single-gender classrooms provide a positive learning environment for students. Teachers, students, and parents emphasized that single-gender classrooms allowed students to be more productive, removed the largest distractions for male and female students, and allowed them to concentrate on their schoolwork. In addition, the data revealed that single-gender classrooms had a positive impact on girls as viewed by teachers, female students, and parents of female students in terms of feeling comfortable enough to ask questions when they did not understand something.

DEDICATION

This research is dedicated to my father Mr. Johnny Bevel Reed (April 2, 1945-December 18, 1994). Daddy, your close walk with Jesus Christ, intelligence, work ethic, strong values, and unwavering motivation helped mold me into the woman that I have become. I regret that you are not here to see so many of my accomplishments and the completion of this dissertation. No matter how many years have passed, I will always be daddy's little girl. You are my guardian angel and I am the apple of your eye forever and always. I hope and pray that I have made you proud of me.

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CHAPTER I

INTRODUCTION

The passage and subsequent signing into law of the No Child Left Behind (NCLB) Act on January 8, 2002 changed the landscape for educators and public school children across the country (USDE, 2004). Educational leaders have considered intervention strategies that have demonstrated success, looking at both public and private schools in the United States as well as school structures in other countries. One avenue NCLB provides is that of single-gender education within a public school setting. There are many states that have several single-gender public schools and classrooms. Through NCLB there is now a legitimate atmosphere in which the renewed interest in the debate between the measurable effects of single-gender classrooms can occur (USDE, 2004).

The status of gender-based education began to change when NCLB included a provision {section 5131(a) (23) and 5131(c)} that allows local educational agencies access to innovative program funds to support same-gender classrooms and schools. Its intention is to authorize single-gender education in public schools. The new regulations allow co-educational public schools (elementary and secondary schools) to offer single-sex classrooms, provided that these schools (a) provide a rationale for offering a single-gender class in that subject, (b) provide a co-educational class in the same subject at a geographically accessible location, and (c) conduct a review every 2 years to determine whether single-sex classes are still necessary to remedy whatever inequity prompted the

school to offer single-sex classes in the first place (National Association for Single-Sex Public Education [NASSPE], 2013).

The new regulations also cleared away the confusion surrounding the legal status of single-sex schools. In fact, the new regulations provide some incentive for school districts to offer single-sex schools rather than single-sex classrooms within co-ed schools. Single-sex schools are exempt from two of the three requirements. They do not have to provide any rationale for their single-sex format and they do not have to conduct any periodic review to determine whether single-sex education is necessary to remedy some inequity. They do have to offer substantially equal courses, services, and facilities, at other schools within the same school district but those other schools can be single-sex or co-ed. Charter schools are exempt from all three of the requirements (NASSPE, 2013).

Gender equity is perplexing to educators. Boys and girls react differently in different gender group configurations (Sadker, 1999). In a single-sex grouping, girls are more reflective and generally have lower self-esteem, while boys are more aggressive and competitive (Archer, 1998). Single-sex environments offer several advantages (Hughes, 2006). These range from reduced stereotyping (Brutsaert, 2006; Jones & Dindia, 2004; Salomone, 2006; Sax, 2005b), to more gender-tailored instruction that addresses stereotypes (Mills, 2004; Warrington & Younger, 2001), to more enjoyable educational settings (Belcher, Frey, Yankeelov, 2006).

This study presented the perspective of teachers, students, and parents of the initial year of implementing single-gender classrooms. Bowden, Lanning, Pippin, and Tanner (2003) noted the importance (a) attitudes, (b) characteristics, (c) conceptions of self, and

(d) intellectual and interpersonal dispositions have on the success of a program. Second, relevant data relating to behaviors during the initial year of implementation, (e.g., discipline incidents and student attendance data was examined.

Statement of the Problem

Given the pressure imposed by the accountability models and the opportunity for expanded local control enabled by current education legislation, some educators are exploring various avenues for improving the way students are taught. NCLB has enabled educators to explore better methods of teaching students. In a changing society, not only the pedagogical but also the environmental and social aspects of schools must be considered.

Gender-based brain research illuminates differences in the ways in which males and females learn. There are studies that reveal possible advantages and disadvantages to implementation of single-gender schooling (Gilson, 1999; Lee & Bryk, 1986; Madigan, 2002; Riordan, 1985; Staponski, 1999). Brain research has revealed significant differences in the brains of males and females. Some research also suggests that gender can influence learning. Studies have likewise provided information on the cognitive, social, and developmental growth rates of males and females. The brains of men and women are to a significant extent wired differently from the start. These developments have opened up an opportunity for a paradigm shift toward gender-based instruction (Kimura, 1996).

The research questions developed for the study were based on a compilation of research findings that were discovered through a review of the literature focusing on single-gender education. Very infrequently have teachers, students, and parents been

provided the opportunity to share their perspectives, insights, interests, and opinions on school reform efforts prior to the implementation phase and during. This study, therefore, brings to light upper elementary teacher, student, and parent perspectives of single-gender education as well as their levels of interest in its implementation in a public school setting.

Research Questions

This study is guided by the following two research questions:

1. What were the perspectives from teachers, students, and parents with the initial year of implementation of single-gender classrooms?
2. What school level data could be analyzed and summarized with respect to student behaviors during the initial year of implementation?

Justification for the Study

Today's educators are highly concerned with measuring the academic growth of individual students. Given the pressure imposed by the accountability models combined with the opportunity for expanded local control enabled by current education legislation, some educators are exploring various avenues for improving the way students are taught. One such avenue is single-gender schooling. In a changing society, however, one must consider not only the pedagogical but also the environmental and social aspects of school settings. Several studies have indicated that separating students according to gender has a positive impact on academics (Hagg, 2000; Maslen, 2001; Sommers, 2001) and on the attitudes of students (Brutsaert & Bracke, 1994; Smith, 1996; National Coalition of Girls' Schools, 1999; James & Richards, 2003).

It is vital for the future of our society to understand the lack of academic achievement among males and females regardless of their ethnicity. Single-gender education is one method or policy that school districts could use to increase academic achievement, decrease behavioral referrals, and increase self-esteem and success in society. There is literature that suggests that single-gender education helps those students who are of low socioeconomic status and who have been historically disadvantaged, such as racial, ethnic, and religious minorities, both males and female (Flannery, 2006; Jenkins, 2006; Martino, Mills, Lingard, 2005; Spielhagen, 2006; Younger & Warrington, 2006).

Young (2002) observed that there are clear educational problems that disproportionately affect male students. She believed these problems should be evaluated in the light of some gender-specific solutions. Programs funded by both private and government groups that address the issue of girls' underachievement in math, science, and computers have proliferated. Programs targeting boys' deficits in reading and writing are working well in England. In 2001, the U.S. Department of Education gave nearly $200 million in grants to state initiatives aimed at improving reading skills in elementary schools as part of the Reading Excellence Program. Yet, none of this funding was used to specifically address the gender gap in literacy specifically (Young, 2002).

Young (2002) believed that single-gender education deserves more consideration. She proposed that single-gender education is the best option for some males and females, not just because of the difference between sexes but because some students learn best without the distracting presence of the other sex. Currently, parents who want single-sex schooling for their children have fewer options than those in a co-educational setting.

Present opinions for single-gender schooling are generally found in the private sector and are costly. The more diversity there is in education, the more education can be tailored to each child's individuality.

By examining the impact of single-gender classrooms (Grades 3, 4, 5, and 6) school and district level administrators will be able to evaluate the effectiveness of the single-gender classrooms and make decisions about the future of this type of classroom setting. The findings could influence decisions concerning other grade levels and other schools within the district in regard to single-gender grouping.

Research involving public school teachers, students, and parents who play a key role in the conversion of a school or classroom from co-educational to single-gender is beneficial to administrators, other teachers, and other public school personnel. By participating in this study, upper elementary school teachers who were currently teaching in a single-gender setting along with parents and students were given an opportunity to use their experience as a means of providing perceptions, opinions, and insights on the idea of implementing single-gender education in an upper elementary setting. This study also targets those administrators with an interest in transforming current co-educational facilities to facilities that also serve single-gender grouping of students. The study might be designed to elucidate the specific change processes involved.

This study contributes meaningfully to the body of available research by providing decision makers with the perspectives of teachers, students, and parents regarding the implementation of single-gender classrooms in hopes that school district leaders will consider their perspectives when deciding whether to fund single-gender education. Unlike previous studies, which focused primarily on middle schools and high

schools, this study focused solely on a Title I school within an upper elementary setting with a significant representation of English Language Learner (ELL) students.

Sax (2010) stated that girls enjoyed cooperative learning groups and boys enjoyed competition and challenges. Girls liked open-ended tasks and boys liked assignments that can be completed quickly. Girls enjoyed music, drama, and dancing to express feelings and boys preferred sports or action figures to express concepts. Girls preferred reading assignments over math or science assignments and boys preferred math or science assignments over reading assignments. Girls saw academic failure as a failure of self and disappointment to others and boys saw academic failure as a failure of the subject. Girls tended to express themselves more through fiction and poetry and boys liked short discussions and want to reach conclusions quickly.

If single-gender education is to be implemented on a limited or global scale, the teachers, parents, and students view is important. Teachers are currently providing educational services to students in both co-educational and single-gender settings. Understanding their view is important to the success or failure of single-gender education. Using teachers, students, and parents perspectives of single-gender education, allows school districts to better implement single-gender education classes or at the very least improve the co-educational classrooms, the vast majority across the United States.

Delimitations of the Study

This study was delimited to an intact group of students in Grades 3-5. The selected students were currently enrolled in the single-gender third, fourth, and fifth grade classes at this public upper elementary school during the 2008-2009 school year.

Differential selection did not occur because females taught males and males taught females.

Limitations of the Study

There were no single-gender classes in the 2007-2008 school year. The study was confined to the 2008-2009 school year. The study is limited to one upper elementary school and is limited to students in Grades 3-5. Therefore, the application of findings is somewhat limited to students of similar age in this pilot program. This study is limited to the data available for all students, staff/faculty, and administrators in the study.

The study was confined to the 2008-2009 school years, thus long-term impact cannot be determined. This was the students' first experience with single-gender classes. The findings could potentially be transferable to other schools and districts whose demographics are similar.

CHAPTER II

REVIEW OF LITERATURE

Single-gender education is a multi-faceted issue. While it is not a new concept, there are new regulations, new applications, and research studies emerging. The review of literature presented here addresses the evolution of single-gender education; gender-based brain research; the constitutionality of single-gender education; gender equity; gender differences in achievement; strategies to reduce the gender gap; arguments in favor of and arguments against single-gender classrooms; experiences of teachers and students in a single-gender learning environment. Educators in America have always debated about how students should be educated. The only one certainty regarding education is that education constantly changes (Ediger, 2000).

A review of literature implied that there is little agreement as to whether the learning of males and females is supported and developed more in single-gender classrooms than in mixed-gender classes. There is some evidence that males could benefit from single-gender classes because teachers tend to target males' needs and interests more effectively than they do for females. Some teachers and males enjoy single-gender classes because they eliminate pressure to perform in front of females. Males enjoy the bonding in the male-only environment created in all-male classes (Younger & Warrington, 2002).

The purpose of this chapter is to examine (a) the evolution of single-gender education, (b) gender-based brain research, (c) the constitutionality of single-gender education, (d) gender equity, (e) gender differences in achievement, (f) strategies to reduce the gender gap, (g) arguments in favor of single-gender classrooms, (h) arguments against single-gender classrooms, (i) leadership in implementing single-gender education, and (j) experiences of teachers and students in a single-gender learning environment.

Current interest in single-gender grouping has been rejuvenated by cynicism about whether or not co-educational classrooms foster equal treatment of males and females. Research shows there are advantages and disadvantages of single-gender grouping. There are some areas of consensus such as increased achievement, better attitudes, and self-esteem. These could be beginning points for further research regarding the effects of single-gender grouping on educational outcomes (Hagg, 2000).

The Evolution of Single-Gender Education

Females in America have not always had the same opportunities as males to be educated. One hundred and fifty years ago separate schools for men and women were considered necessary because of the separation of the genders in social and political life. Single-sex education was not a choice but a cultural mandate. Women were educated so they could fit into society and educate their families. Mothers were charged with the responsibility of educating their male children to become productive citizens (Kaminer, 1998).

Single-gender schools have historically been considered to provide higher quality education. In earlier years, many middle class parents did not wish for their daughters to mingle with poor boys in public schools. Parents enrolled their daughters in single-gender

institutions to accommodate their performances (Kaminer, 1998). The first all-female school was founded in the early 1800s and was committed to preserving gender roles. Oberlin became the country's first co-ed college in 1837. The Seven Sisters opened their doors in the last decades of the nineteenth century and evolved into a female Ivy League, educating the daughters of elites and providing social and professional mobility to some members of the middle class.

Such schools were essential to the nineteenth-century women's movement. They not only inspired activism in women and prepared them to work outside the home but also created wage-earning work, as school teaching became one of few respectable professional options for unmarried females (Kaminer, 1998). Debates concerning separating the sexes for instruction have occupied the attention of educators, politicians, and social reformers for many years. According to Jackson (2002), the focus has shifted from the benefits of single-gender classes for females to the benefits for underachieving males.

The 1970s marked the beginning of research on gender issues in schools, with a focus on uncovering the inequities of sexist curriculum and materials in the co-educational classroom (Frazier & Sadker, 1973). Soon after the passing of Title IX (1972), the Women's Educational Equity Act (1974) was approved, providing funds for research and training materials to help schools eliminate gender bias. In 1980, the National Institute of Education began officially funding research on sex biases.

One of the first major studies on single-gender grouping occurred more than 30 years ago. This study (Dale, 1969, 1971, and 1974) conducted the most extensive British comparison of co-educational and single-gender schools in a three-volume work entitled

Mixed or Single-Sex School? Questionnaires on a multiple of topics were administered to thousands of students, former students, and teachers in British secondary grammar schools on a multitude of topics. Although his research and the research he reviewed were hampered because of pre-existing student characteristics and the effects of school type, Dale did find patterns of results that suggest differential effects of single-gender education.

Dale (1974) found that co-educational settings seemed to increase boys' interest in math and scientific subjects, but to decrease their interest in language. For girls, he reported that the co-educational setting seemed to increase interest in literary and language subjects and decrease interest in physical science and perhaps math. Despite this apparent advantage for single-gender schools, boys attending co-educational schools had somewhat higher levels of overall achievement than boys who attended single-gender schools whereas there appeared to be little or no difference between girls attending each type of school.

On the basis of his research and that by others, Dale concluded, "a cautious summing up would be that the progress of boys is probably improved by co-educational while that of girls is not harmed" (Dale, 1974, p. 267). He continued to note that "possibly the happier atmosphere of the co-educational schools also helps to improve the work" (Dale, 1974, p. 268). Dale's work became the basis for the widely accepted move toward a co-educational system in Britain.

In contrast, Coleman (1961) suggested that a co-educational setting "may be inimical to both academic achievement and social adjustment" (p. 51). In the book, *The Adolescent Society*, Coleman (1961) reported the results of a survey of 10 Midwestern

American co-educational and single-gender high schools reflecting the relative importance of academics, sports, and social activities to students in the schools. He defined the term *subculture* as an adolescent climate in which these students have most of their interactions with their peer group, as opposed to an adult society. An adolescent *value climate* reflects the relative importance of academics, sports, and social activities to students in the school.

Of the 10 high schools, the subculture was weaker in the all-female schools, meaning that more value was placed on academics and less value on sports and social activities. In addition, the academic performance of females in these schools exceeded that of their female counterparts in the co-educational schools. The all-female school exhibited a low level of typical adolescent values (i.e., appearance and socializing) and a high degree of order and discipline. However, in the all-male schools, there was a high adolescent subculture (i.e., increased peer pressure for all areas of sports, social activities, and academics) together with a high level of discipline.

In all-male schools, the adolescent values were positively related to achievement. The high adolescent value system brought about a high level of discipline, which in turn facilitated a high level of learning. Therefore, the high adolescent subculture in all-male schools was actually conducive to greater academic achievement, as opposed to all-female schools, where it was negatively related. Coleman's (1961) research suggests that attending any high school virtually cuts adolescents off from the rest of society, carrying on their entire social lives with others their own age. He further contended that the separation of males and females in high schools affects each gender differently.

At issue is the age of these studies. Since both of these studies form conclusions based upon data over 30 years old, with one taking place in Britain and the other focusing on Midwestern America, it is difficult to assume these results apply to conclusions about current schooling. However, these studies suggest differential effects that should be examined in current single-gender educational efforts. Specifically, we need to determine how students perceive their learning environment and whether there are differences between the genders on this variable in single-gender and co-educational environments.

The 1980s saw a change in how theorists and educators perceived gender bias. Where the previous decade had sought to eliminate bias by assuming female and male sameness, paradigms now shifted to a focus on the differences between males and females (Belenky et al., 1986; Gilligan, 1982). Educational reform looked like what Tidball (1989) called female friendly schooling with efforts to make traditional curricula reflect female's interests. The assumption was that females had different needs and interests and schools would have to alter their practices to address those differences. There was a renewed interest in single-sex education especially at the university level. Studies of the success of grades of women's colleges were released, fueling the argument that females and males simply need a separate space to learn (Tidball, 1989).

In 1997, California created an aggressive, yet innovative, approach to single-gender education with the formation of its Single-Gender Academies. These academies were located in six districts across the state. The establishment of California's Single-Gender Academies represented one of the largest efforts to establish single-sex schooling within the public sector since the passing of Title IX in 1972 (Woody, 2001).

California's efforts served to lead the way to an increase in single-gender public educational facilities.

The theories and research of the 1990s have provided greater depth in our understanding of female and male experiences of schooling (e.g., Gilbert & Gilbert, 1998; Kenway & Willis, 1998). Gender bias can no longer be seen as an isolated problem but is now understood as representative of a larger system of oppression including race, class, and sexuality. Reform efforts are more complex than simply eliminating sexist language or curricula. Educators strive to implement alternative pedagogies in an effort to challenge the oppressive power inherent in traditional education (Murphy & Gipps, 1996). Assumptions of how females and males learn have been complicated by the realization that gender is only one of many factors that influence the educational experience. Finally, gender bias is understood as affecting both females and males, as neither sex is immune to societal pressures and expectations (American Association of University Women [AAUW], 2001).

A Chronology of Single-Gender Education

There is a difference between single-gender classrooms and single-gender schools. Single-gender classrooms are offered as an option in a co-educational facility; however, single-gender schools serve only one gender within the building. According to the NASSPE, at least 506 public schools in the United States offered single-sex educational opportunities. About 390 of those schools are co-ed schools which offer single-sex classrooms, but which retain at least some co-ed activities (NASSPE, 2011). According to NASSPE, 116 of the 506 schools qualified as single-sex schools, meaning that students attending any of those schools have most or all of their school activities in a

setting which is all-boys or all-girls. All but five of those 116 schools were single-sex campuses, such as the Pro-Vision School, an all-boys school in Houston, Texas or the Charity Adams Early Academy Girls in Dayton, Ohio (NASSPE, 2011).

In 1996, the Young Women's Leadership School in New York was founded. The San Francisco 49ers Academies also were established in 1996 in East Palo Alto, California, opening along with five other single-gender schools, which became known as California's Single-Gender Academies (NASSPE, 2008). The distinguishing feature of this cluster of schools is that they served both male and female students in the same building but provided single-gender classes. These academies, established between 1996 and 1997 in California, remained in operation until 1999. After three years of operation, five of the six districts closed their single-gender academies (Datnow, Hubbard, & Conchas, 2001).

In Florida, the Orangewood Elementary School in Fort Myers began offering single-gender classrooms for fifth-graders, in the fall of 2006. By the end of the 2006-2007 year, every boy in the all-boys class scored proficient in both reading and math on the Florida Comprehensive Assessment Test. That was a huge change from the previous year, when most of those same boys failed to score proficient in either reading or math. The all-boys format allowed the boys to become a team (NASSPE, 2008).

Thurgood Marshall Elementary School, located in Seattle, Washington, was established in 2000 (NASSPE, 2008). This school was originally a co-educational facility; however, the principal of the school, Benjamin Wright, implemented single-gender classrooms within the school. The Young Women's Leadership Charter School located in Chicago, Illinois was also established in 2000 (NASSPE, 2008). This school

was modeled after the Young Women's Leadership School in New York; it fosters an emphasis on science and technology.

In 2001, Moten Elementary School in Washington, DC was established in the D.C. community with the lowest socioeconomic status (NASSPE, 2008). Currently, over 98% of the students qualify for subsidized lunch. This school was a co-educational facility until the principal of the school, George Smitherman, separated the classes by gender.

In 2002, there was an explosion of interest in single-gender public educational settings as evidenced by the establishment of single-gender public education facilities across the nation. These schools included The Brighter Choice Charter School in Albany, New York; The WALIPP Preparatory Academies for Boys in Houston, Texas; The Fitz Simons Middle School in Philadelphia; Southern Leadership Academies and Paducah Middle School in Kentucky; and Withrow University High School in Cincinnati, Ohio (NASSPE, 2008).

In 2003, eight new single-gender public schools were established: The Middle College High School, in Guilford County, North Carolina, serving female students; The Westwind Middle School Academy in Phoenix, Arizona, serving girls and boys in separate classrooms; The Afro Centric School in Columbus, Ohio, offering single-sex classes for fourth-and fifth- grade male and female students; Lincoln Elementary School in Toledo, Ohio, an all-boys school; Stewart Elementary School in Toledo, Ohio, serving only female students; Middle College at North Carolina Agricultural and Technical State University in Guilford County, North Carolina serving at-risk high school boys; The Pepper Middle School in Philadelphia, offering single-gender classrooms; and The

Mount Scott Learning Centers in Portland, Oregon, offering all-female classes (NASSPE, 2008).

By 2004, 10 more single-gender public schools had been established: Dent Middle School in Richland, South Carolina; The Excellence Charter School in Brooklyn, New York; The Irma Rangel Young Women's Leadership School in Dallas, TX; The Eagle Academy for Young Men, The Urban Assembly Academy for Young Men, and The Young Women's Leadership School of the Bronx, all located in New York, New York; Crossroads Preparatory Academy, Chase Academy for Communication Arts, and The Harte School, all located in Columbus, Ohio; and Minneapolis Academy in Minneapolis, Minnesota (NASSPE, 2008).

August 2005 brought about the opening of six additional single-gender public schools: The Langston Charter Middle School in Greenville, South Carolina; The Charity Adams Early Academy for Girls in Dayton, Ohio; Girls Prep and The Young Women's Leadership School, Queens Campus, both located in New York, New York; The Capitol Pre-College Girls Academy and The Capitol Pre-College Boys Academy, located in Baton Rouge, Louisiana; Edgar Evans Elementary School in Indianapolis, Indiana; and Rhodes High School for Girls in Philadelphia, Pennsylvania (NASSPE, 2008).

For the 2006-2007 school year four single-gender public schools opened: Charter School for Community Development and Careers in Rochester, New York; The Dayton Elementary Boys' School in Dayton, Ohio; Philadelphia Charter High School for Boys in Philadelphia, Pennsylvania; and The Center for Self-Enhancement Middle School in Portland, Oregon (NASSPE, 2008).

In 2008, Foley Intermediate School in Alabama has twice been recognized as being one of the most successful schools in the state in closing the achievement gap between Black and White students after adopting the single-sex format. Farmington Intermediate School, in Arkansas opened in 2008 offering both single-gender and co-ed classrooms in both grades (Grade 4 and Grade 5). As of 2009 Fairview Elementary School in Fort Smith, Arkansas offers single-gender classrooms just in sixth grade. Compton Avenue Elementary School and King-Drew Medical Magnet School, in Los Angeles, California began offering some gender-separate classrooms in the 2007-2008 school year (NASSPE, 2008).

In Florida, Westside Elementary; The Richard Allen Leadership Academy; James Elementary School; Ballard Elementary; Oneco Elementary; Fellsmere Elementary; Young Men's Preparatory; began offering single-gender classrooms (NASSPE, 2008). Single-gender education has now evolved into an acceptable and, in some cases favorable, method of school reform. There has been an explosive increase in the establishment of such environments across the nation.

The United States Department of Education (2002, as cited in Davis, 2004) commissioned a study to determine whether all-male or all-female education can help improve learning. Riordan lead the $1.2 million study. Riordan partnered with the RMC Research Corporation in Portland, OR and the Washington, DC based American Institutes for Research. The study included an exhaustive review of the literature on the topic followed by a survey of the existing public single-sex schools. The research examined a wide range of factors, including grade levels, socioeconomic status of students, race, teacher credentials, per pupil expenditures, and discipline (Davis, 2004).

Key findings that emerged from Davis (2004) included:

- The results of the systematic review are mixed, though the findings suggest some support for the premise that single-sex schooling can be helpful. Among the concurrent academic accomplishment outcomes, 53% were null (favored neither single-sex nor coed schooling), 10% had mixed results across sex or grade levels, 35% favored single-sex schooling, and only 2% favored coed schooling. Among the concurrent socio-emotional outcomes, 39% were null, 6% were mixed, 45% favored single-sex schooling, and only 10% favored coed schooling.
- The site visit observers in the eight single-sex school sites found little evidence of substantive modifications to curricula to address the specific needs of either boys or girls, although some teachers who were interviewed provided examples of using support materials specific to the interests of girls.
- In the eight elementary and middle schools visited, site visitors observed more positive academic and behavioral interactions between teachers and students in the single-sex schools than in the comparison coed schools.
- Both principals and teachers believed that the main benefits of single-sex schooling are decreasing distractions to learning, and improving student achievement.
- Teachers cited greater benefits of single-sex schooling for girls than for boys in 5 of the 10 benefit categories. That is, teachers believed that girls benefit more than boys from better peer interactions, a greater emphasis on academic behaviors, a greater degree of order and control, socio-emotional benefits, and

safe behavior. Teachers believed that both sexes benefit equally from single-sex education in terms of a greater sensitivity to sex differences in learning and maturation.

- In separate focus groups, both parents and students cited essentially the same benefits as the teachers and implied that they chose the single-sex school for these reasons.
- Teachers in single-sex high schools rated problems with student behavior as less serious than teachers in coed schools, but the opposite was true in middle schools. There were no statistically significant differences between single-sex and co-ed schoolteacher's ratings of problems at the elementary school level. (p. ix-x)

The new regulations of NCLB encourage an increase in single-gender public schools in America. Organization of these new schools and classrooms provides further opportunities for researchers to investigate whether single-gender academic settings are successful (Davis, 2004). According to NASSPE (2008), there has been a surge of interest in single-gender education. Some districts are selecting to implement single-gender schools while others are merely experimenting with single-gender classrooms.

Gender-based Brain Research

In order to consider gender differences in learning, one must understand brain-based learning theory. Brain-based learning is a comprehensive approach to instruction using current research from neuroscience. Brain-based education emphasizes how the brain learns naturally and is based on what is currently known about the actual structure and function of the human brain at varying stages of development (Froschl & Sprung,

2005). In recent years, educators have explored links between classroom teaching and emerging theories about how people lean. Brain research provides us with many possibilities for education, and there is much discussion among educational professionals about how this research should be considered when developing programs and curriculum. Different parts of the brain in males and female brains develop at different rates. Some areas of the female brain are more mature than that of males and vice versa (NASSPE, 2008).

Because of the growing interest in learning and the brain, the attempts to synthesize current research in the area of brain-based learning from a theoretical and practical approach will help to define and describe the characteristics of brain-based learning. Brain-based learning accommodates the learning style of individual students. It is learning with the brain in mind (Jensen, 2005). In his text, *Teaching with the Brain in Mind*, Jensen (2005) explained, "brain learning is a reality check" (p. 77). Thirty years ago, good teaching was defined as lecture, content classes, and quiet students sitting still at their desks.

Is this how students learn best? Educators needed to combine the findings of brain research to improve their teaching techniques. According to Jensen (2005), it is now known that incorporating intense emotions associated with celebration, competition, or drama can stimulate the release of adrenaline, which strongly enhances memory in learning. Jensen (2005) stated, "Challenge, feedback, novelty, coherence, and time are crucial ingredients for rewiring the brain" (p. 79). In order for connections to strengthen, students need time to think about, digest, and act on their learning. Based on neurological research, Jensen highlighted three relevant and essential features of the brain.

Adaptability (the constantly changing brain), integration (the structures of the brain that compete and cooperate), and sophistication (the complexity of the brain) will help us to establish the nature of the brain.

The sophistication or complexity of the brain is never more evident than when the process by which learning occurs. Input comes in from outside stimuli and is routed to the thalamus for processing. Meanwhile, the information is routed simultaneously to appropriate cortical structures (occipital and temporal lobes) and the sub-cortical areas (the amygdale). If it is an emergency stimulus, the amygdala will respond and recruit other necessary brain areas as soon as possible. Later, the information is sent to the hippocampus for more evaluation and is held over time. Over time, the hippocampus will organize, distribute, and connect the memories with other areas of the cortex for long-term memory storage (Jensen, 2005).

Although an intensive and complex process, the initial process takes place with lightning speed, but the subsequent process can take hours, days, or even weeks to complete (Jensen, 2005). Jensen acknowledged seven critical factors in the learning process. Those factors are: engagement, repetition, input quantity, coherence, timing, error correction, and emotional states. Because the developing brain engages in highly complex interaction that needs stimulation, and these interactions that need stimulation prompt the brain to become increasingly specialized, these factors will influence how and what children learn.

These brain differences and the hardwiring of gender into our brains occur in three biological stages. Stage 1 of brain development is elucidated by genetics research, the second by endocrinological research and the third psychosocial research (Dewing,

Shi, Horvath & Vilain, 2003). Stage 1 of the brain's biological developments, includes the identification of chromosome markers for gender are included in the genomes of females and males at the time of conception (Gurian, 2005). UCLA researchers identified chromosome markers for the development of male and female built into the fetal brain. During Stage 2, these chromosome makers bombard the womb with surges of male and female hormones, which format XX brains to be females and XY brains to be male. This bombardment into the brain occurs with intense frequency between the second and fifth month of gestation. Researchers at universities around the world, including the University of Pennsylvania, McMaster University in Canada, UCLA and the University of London, have the ability to trace the development of gender in the fetal brain through bombardments of testosterone and other hormones (Guiran, 2005).

In Stage 3, the baby is born a male or female, sending nonverbal and then verbal cues to parents, the community and the culture. These clues are based on the child's genetics and are biological. Researchers at Harvard University and the University of Denver have traced these biological clues through the use of Single Photon Emission Computed Tomography (SPECT) and Positron Emission Tomography (PET) scan research in attachment theory (Gurian, 2005). The research indicates an expansive relationship between genetic, hormonal, neural and social forces. The hardwired gender identification within both males and females is inborn and then becomes socialized by cultures (Gurian, 2005).

One neurological difference between males and females is in their ability to hear. Females have a sense of hearing that is two to four times more accurate than males (McNeil, 2008; NASSPE, 2008). Males and females have different responses to light

resulting in different emotional and cognitive responses (Weil, 2008). Other neurological difference between males and females is the maturation of language and fine motor skills.

Sax (2005), a leader of single-gender education, saw the need to again focus on gender. Females mature six years earlier than males, but the maturation of the brain associated with math and geometry is four years sooner in males than females Sax (as cited in the New Zealand Herald, 2008) stated, "the irony is that we've had roughly three decades throughout the English speaking world of ignoring gender, pretending that gender doesn't matter" (para. 29).

The Constitutionality of Single-Gender Education

Salomone (2003), in a book titled *Same, different, equal: Rethinking single-sex schooling*, observed, "The controversy over single-sex schooling simply revolves around two concerns: whether it is legal within public schooling and whether it produces educational benefits for girls or boys" (p. 5-6). The controversy over this policy initiative is intense across the nation, including over half of the states in the United States, which currently provide the option of single-gender public education. Growing interest in single-gender education and increased flexibility at the federal level creates an environment in which single-gender education will become more common in the United States. As a result of the growing numbers of single-gender classes and schools, it is valuable for educators to have clear, accurate, timely and consistent constitutional standards to evaluate the use of single-gender education in public schools (Burgin, 2007).

The Supreme Court would condemn state actions that reinforce stereotypes and over-generalizations about the aptitude of men and women. Education without discrimination is a governmental objective that the Supreme Court recognized in *Brown*

V. Board of Education. The State of Kansas' purpose of segregation in *Brown v. Board of Education* was to maintain racial segregation. Current single-gender attendance allows for voluntary attendance instead of a mandate from the state. The goal of single-gender education is to help students realize their full potential, instead of instilling inferiority between the sexes (Burgin, 2007). Education continues to be an important governmental function; however, the Supreme Court has expressed a clear standard for single-gender education.

Providing voluntary attendance and whether substantially equal opportunities are given to both genders, serve as the major factor that the Supreme Court considers in determining the constitutionality of single-gender education (Jenkins, 2006). Voluntary schools are less likely to inflict harm on students because those not enrolled in single-gender education can obtain benefits from co-educational settings. This reduces the likelihood of students and parents having a perception of harm. Also, this assures educators and courts that the students who attend single-gender education settings believe that this setting will help the student's achieve their educational goals.

Providing substantially equal opportunities for each gender reduces the likelihood of unequal treatment. Making available equal opportunities ensures that educators are not shortchanging the needs of either males or females and that single-gender education is subject to a similar constitutional bar as co-educational settings (Jenkins, 2006).

The Supreme Court's view of single-gender education evolved from years of encountering single-gender education across the nation (Burgin, 2007). The first case the Supreme Court viewed regarding single-gender education was in 1977, *Vorchheimer v. School District of Philadelphia*. In this case, the Court faced a challenge to the

Philadelphia School District's operating single-gender male and female academies for gifted students. The Third Circuit Court approved single-gender education in this case based on the voluntary nature of the programs (Burgin, 2007). In a split decision (5-4), the Supreme Court decided without offering an opinion. The lack of a majority in this case allowed Philadelphia to continue single-gender education (Burgin, 2007).

Five years later, the Supreme Court would weigh in on single-gender education; revolving around the exclusion of males. In *Mississippi University v. Hogan*, a male applicant to a nursing program for all women challenged the admissions policy (Burgin, 2007; Jenkins, 2006). The Supreme Court struck down the admissions policy because the state's purposes for admitting only women were not sincere and as a result, not persuasive. The Court rules that, "excluding males from admission to the school of nursing tended to perpetuate the stereotyped view of nursing as exclusively a woman's job" (Burgin, 2007, p. 3). The Court's expression of stereotyped views of gender would be the foundation for future cases surrounding single-gender education.

During the 1990's, while single-gender education was being publicly and politically debated, the Supreme Court weighed in on the topic with its decision in *United States v. Virginia* (Burgin, 2007). The suit brought to the court argued that the male-only admissions policy violated the Civil Rights Act of 1964 and the equal protection under the 14th Amendment (Burgin, 2007). The United States Department of Justice looked to force the state sponsored college, Virginia Military Institute (VMI), to open its admissions to females. The litigation eviscerated the long history of female exclusion from the state of Virginia's military institution. This decision by the Supreme Court also

had a major impact for single-gender education across the nation both in post-secondary settings and in K-12 public education.

As the case wound its way through district and appellate courts the decisions in each differed. The district court ruled in favor of VMI, noting that single-gender education "yields substantial benefits" (Burgin, 2007, p. 4). The Fourth Circuit Court of Appeals reversed the districts court decision. The Fourth Circuit provided three options: "admit women to VMI; establish parallel institutions or programs; or abandon state support, leaving VMI free to pursue its policies as a private institution" (Burgin, 2007, p. 4). The state of Virginia chose to create parallel institutions; however, it offered less academic courses, and had less financial resources. The parallel institution also was located on a separate campus in a different town. The district court and the Fourth Circuit Court of Appeals both approved the plan, preparing for the Supreme Court's intervention.

The Supreme Court had to make the determination if the state of Virginia's practice of excluding females from VMI violated equal protection and if that was the case, what remedy the Court would approve. According to Justice Ginsburg, the Supreme Court must determine "whether a justification is exceedingly persuasive" and that meeting this burden "rested entirely on the state" (Burgin, 2007, p. 5). The state of Virginia's justification for excluding females had to be "genuine not hypothesized or invented" and had to be specific, not relying on "overboard generalizations about the…capacities or preferences" of the genders (Burgin, 2007, p. 5).

The Supreme Court held that the state of Virginia did not establish an exceeding persuasive justification for denying females admissions at VMI. The remedy that the

state provided did "not cure the constitutional violation" (Burgin, 2007, p. 5). As a result of this violation, the Supreme Court commanded VMI to open admittance to the college to females. Justice Scalia, in a dissenting opinion, predicted the death of single-gender education. He felt that the Court's opinion left single-gender education susceptible to attack and eventually extinction (Burgin, 2007). This decision clarified the Supreme Court's constitutional standard in relationship to single-gender education in post-secondary education. Justice Scalia's prediction of the death of single-gender education was not realized.

Literature suggests that the constitutionality of single-gender education hinges on two major portions of the Constitution; the 14th Amendment's equal protection clause and the Fifth Amendment's due process clause (Burgin, 2007). The protection of these two areas of the Constitution in regards to single-gender education is vital to its continued use. Providing single-gender education, as a voluntary option and not having stereotyped views of gender are important to maintaining the constitutionality of single-gender education.

Title IX

Legislation relevant to the issue of separating gender is the 14th Amendment to the United States Constitution, which guarantees equal protection of the law, the Civil Rights laws and Title IX of the Education Amendments of 1972. Title IX bars gender discrimination in schools that receive federal funding (Black, 1998). "Title IX regulations 34 CFR 106.34 mandates that no school receiving any federal funds shall provide any course or otherwise carry out any of its education program or activity separately on the basis of sex" (Federal Register, 2002, 34 CFR 106.34). This legislation meant that any

school that did not offer equal opportunity and/or funding for both sexes faced restructuring or being closed.

Dalton (2002) stated:

> single-sex education is the exception rather than the rule. In particular, male-only colleges have all but disappeared and women colleges comprise only a small percentage of the total colleges and universities in the United States. Despite the sycophantic purposes of these programs many of these programs have ended because they have been determined to discriminate on the basis of gender. (p. 395)

Although difficult under the government guidelines, some private and parochial schools have remained single-sex rather than allow co-educational setting or disbanding. Otto (2004) delineated the complications and the opportunities:

> as with the Equal Education Opportunities Act, federal law under Title IX is complicated but can be accommodated while providing the best possible education for those students who do better in a single-sex environment. Districts would merely have to take advantage of the non-application of Title IX to primary and secondary schools and ensure that neither sex is barred from a federally supported institution or program. (p. 353)

By following these government guidelines in this manner, many traditional single-sex institutions have been able to continue operating in their traditional capacity. However, the merits and legality of such institutions continue to be questioned and challenged in debates on education throughout the United States.

The National Organization for Women (NOW) and the American Civil Liberties Union (ACLU) proposed that single-gender schools would lead to unequal treatment of males and females. Identical programs for males and females must be guaranteed (American Civil Liberties Union, 2004). Opponents of homogeneous grouping believe that separating the sexes in classrooms does little to prepare students to function adequately in a two-gender society. The U.S. Supreme Court has indicated that it would likely support single-gender grouping (Chmelynski, 1998). Carroll (2006, as cited in Vail, 2002) founder of two schools in New York feels that changes in Title IX will open the floodgates for single-gender schools.

However, recent court cases have challenged this legislation as not being absolute. In a case involving the all-male Virginia Military Institute, Justice Ruth Ginsburg (1996, as cited in Sax, 2008) suggested single-sex programs at any level must have an exceedingly persuasive justification. Ginsburg (1996, as cited in Black, 1998) stated "states have the prerogative even handedly to support diverse education opportunities" (p. 32). Some states have interpreted this to mean that they may experiment with single-gender education (Black, 1998).

According to Eckrem, (2006, as cited in Sax, 2008) Title IX does not apply to children in elementary and secondary schools. Opponents are finding that the argument against single-gender classes is a tough legal challenge (Chmelynski, 1998). Salomone (2003) encouraged schools to be mindful of the discrimination restrictions of the law and urges the federal government to allow school districts the freedom to experiment with different ways to educate children. It is possible, according to Salomone, to provide

single-sex schools for females and ensure that males will receive the same quality of education in co-educational classes.

However, the administration of President George W. Bush changed Title IX to make it easier for schools to offer same-gender classes without threats of lawsuits (Vail, 2002). According to Bronski (2002), the Bush administration aimed to increase funding for the development of more single-sex public schools in the United States. Specifically, President Bush spent $385 million from the NCLB a reform of the nation's public schools that called for more parental choice and teacher/student accountability in education, to create schools for males and schools for females.

However, the fact is there are more single-sex schools in the United States now than in the past few decades. There are approximately 30 single-sex public schools currently open in the United States with several more slated to begin operation in the next year or the next few years. Due to the merits and renewed popularity of these institutions, the number of single-sex schools and classrooms will continue to rise during the next decade.

The history of single-sex education shows how the practice has been viewed in the past. This history has played heavily into the beliefs of policy makers as they are constantly tying to develop the most beneficial form of education for the masses today. Some reformers feel that the history of single-sex education highlights its weaknesses that point to the co-educational form of education as the more beneficial form. Others feel that it is the rich history that points to successes in education that have come from single-sex education.

Gender Equity

Gender equity in education resonated as a high-profile issue for years. The prohibition of sex discrimination in schools receiving public funding arose with the passage of Title IX of the 1972 Education Amendments. Interpretations of the law promoted women's issues and forced modifications of public educational institutions (Eisenmann, 1998; Sadker, & Klein, 1991). Public schools with single-sex programs under Title IX changed their practices or closed their doors. As noted earlier, studies in the 1990s cited issues of gender discrimination against female students. Titles such as *How schools shortchange girls* (AAUW, 1992) and *Failing at fairness: How America's schools cheat girls* (Sadker & Sadker, 1994) drew national attention. *Girls in the middle: Working to succeed in school* (1996), an AAUW publication, gathered reports that highlight effective means of embracing gender equity through educational reform efforts (Cohen, Blanc, & Christman, 1996).

A by-product of Title IX is that relatively few schools throughout the country have implemented single-sex instruction within co-educational public schools. Another key element of the single-sex/co-educational debate is the recognition of varied learning styles for male and female students (Salmone, 1999). In 1991, Sadker et al. questioned whether males and females exhibited different learning styles and asserted that educators must study the impact of single-sex education on male and female students at all stages of development. Indeed, the AAUW roundtable debates concluded with several provocative statements such as the following (AAUW, 1998b):

> Even if boys and girls do not have different learning styles, are there other reasons—social or cultural for example—that suggest that they may need to

follow different paths to achieving the same educational goals? If so, what are these paths? (p. 10)

Some educators pose that biased learning environments and the need for sex-segregation can be alleviated through cooperative learning strategies that reduce competition among students (Cohen et al., 1996; Sadker et al., 1991). Competitive learning behaviors are evidenced by males in learning environments (Sadker & Sadker, 1994) while females benefit from learning situations that promote cooperation, collaboration, and communication (Burns, 1998; Mael, 1998; Streitmatter, 1999).

Sex equitable questioning and improved management of student call outs may encourage girls' participation in class (Altermatt, Jovanovic, & Perry, 1998; Orenstein, 1994). Teachers can promote gender equity in their classroom by engaging females in learning, attending to compliant students as often as disruptive students, and requiring the same effort from females and males (AAUW, 1995). A study of student volunteerism (Altermatt, Jovanovic, & Perry, 1998) noted that male students had an increased level of volunteerism in class but teachers called on males and females equally from the volunteer pool. The females' nonparticipation accounted for their reduced level of being called on by the teacher.

The *Trends in Educational Equity of Girls and Women Report*, published in June 2000 by the U.S. Department of Educational Research and Improvement, offered encouraging news to those concerned for the progress of female learners (Bae, Choy, Geddes, Sable, & Snyder, 2000). The report noted that girls seem to have fewer problems than boys in the early grades; boys and girls have similar school dropout rates; whole gender differences favor boys in math and science the proficiency gap has narrowed;

females outperform males in reading and writing; females are equally likely to take challenging math and science courses; and females are much more likely to take (and receive higher scores on) advanced placement English and foreign language tests. Even though male and female students seem to excel in different areas, the report states that over and "by most of these measures, females are doing at least as well as males" (Bae, et al., 2000, p. 11).

While the benefits of gender equity for female learners may be well documented, the effects on male students cannot be ignored (Cohen et al., 1996). The dialogue must include the learning experiences of adolescent boys (Mael, 1998; Sadker, 1999). While boys may not be *miseducated*, it is important to recognize that "gender bias is a two-edged sword" that extracts a price from male learners as well as female learners (Sadker & Sadker, 1994, p. 197). "Girls suffer silent losses, but boys' problems are loud enough to be heard through the school" and manifest themselves through aggressive behaviors, discipline issues, a higher representation in special education classes, and as the lowest academic performers in the class (Sadker & Sadker, 1994, p. 197).

Boys, not girls, may actually be at a disadvantage in the gender gap, according to some education experts. Lee (1997) advocated a "gender-neutral" definition of gender equity, suggesting, "gender differences that disadvantage boys in reading are just as problematic as those disadvantaging girls in science" (Lee, 1997, p. 139). Lee suggested that previous study of single-sex Catholic and independent schools reveal boys rather than girls are often disadvantaged in these environments (Lee, 1997). Poor teaching more powerfully impacts boys than girls. Boys' underachievement is often found among students of average ability (Noble & Bradford, 2000). "Improving the achievement of

boys, while not neglecting the needs of girls, is one of the biggest challenges facing teachers, as well as parents" asserted professor E.C. Wragg in the foreword to *Getting It Right for Boys and Girls* (Noble & Bradford, 2000, p. xv). Also attentive to the achievement of boys, Riordan (1999) claimed no gender gap that favors boys in public secondary school has existed since 1992. Accordingly, the educational needs and experiences of boys should be closely monitored throughout the dialogue of gender equity in our schools (Riordan, 1999).

The needs of male learners are gaining increased attention. A series of action research and case studies on causes for boys' low motivation and poor achievement presents strategies that can be used to positively influence *Raising Boys' Achievement in Schools* (Bleach, 1998). Noble and Bradford (2000) claimed that the underachievement of secondary boys is more "in your face" (p. 21); boys are larger, more disruptive, and closer to adulthood, and therefore of greater concern. However, Noble and Bradford (2000) claimed that boys do not begin the educational process lacking by such a degree behind girls; males merely continue or accelerate a process that is apparent in primary schools and, often pre-school.

Noble and Bradford (2000) specifically cited English as an area of concern with the comment "Not only is English the subject in which boys show the most signs of underachievement, it is the key to further learning and helps to explain why boys underachieve in other areas of curriculum" (p. 25). Bleach (1998) conducted action research exploring factors that influence motivation for eight-year-old boys. Like Noble and Bradford, Bleach expressed concerns for boys' literacy. Bleach (1998) cited a gender

gap in reading habits (low for boys in comparison to girls) and writing as seen through appearance of their work.

In his investigation of where boys begin to show signs of underachievement, Bleach (1998) cited gender as "an accessible area for intervention given our ability to examine girls' and boys' results from examination board statistics" (p. 38). In his findings, Bleach (1998) notes the boys involved in the study did not dislike learning; rather, their enjoyment of learning was affected by opportunities for active involvement. Boys tended to dislike passive teaching thus acknowledgement of boys' learning styles are crucial. Year eight is a turning point for boys' motivation and attitudes for success (Bleach, 1998).

Researchers are increasingly turning their attention to the needs of both male and female learners. Contributors to *Raising Boys' Achievement in Schools* (Bleach, 1998), Terry and Terry (1998) studied GCSE (British standardized tests) results that revealed gender differences. The Terrys (1998) found male and female attitudes toward "language-based work started to diverge around year five" (Bleach, 1998, p. 108), when boys' attitudes began to decline. By changing classroom practices through differentiation, attention to gender issues, praise and reward strategies, and effective target setting for students, the achievement of all students was raised. These finding are similar to the AAUW (1998b) claim that what matters most in the classroom is a focused curriculum and quality instruction in small unbiased classrooms.

In a review of societal and educational failures of boys, the underachievement of boys is addressed and a call is made for a balance of male and female learners' needs through gender equity processes (Epstein, 1998). Students' varied learning styles and

approaches to academic work should be recognized by educators (Murphy & Elwood, 1998). Indeed, too narrow a view on learning styles and appropriate learning behaviors can limit the potential of female and male students (Murphy & Elwood, 1998). Strategies that benefit girls, such as adult mentoring and identity development similarly benefit boys' learning (Cohen et al., 1996). Lee (1997) argues that separating by gender does not offer solutions to gender equity problems. Instead, she claims gender equity can be addressed within the school organization such as smaller schools, active instruction focused on higher level thinking and more involved student-faculty relationships. The organizational structure that female schools are more likely to offer can benefit co-educational schools as well (Lee, 1997).

In opposition to the call for equity within co-educational constructs, females and males have different interests and different academic strengths and weaknesses (Bowman, 2000). Swan (1998) expresses a similar viewpoint:

> Boys and girls do learn differently. We must accommodate their different needs within the classroom. Boys must be lead to appreciate the importance of presentation, girls must accompany presentation with depth of understanding; boys must think before they speak, girls must take risks and offer an answer. (p. 170)

Educators and researchers question if, and where, achievement gaps between male and female students continue to exist. Some claim gaps report favorably on boys' achievement, others claim gaps favoring girls. While mixed reports exist, certain statements are clear. For example, *The Condition of Education 1997: Women in Mathematics and Science* (NCES, 1997) states "women have made tremendous progress

in education – putting them on par with men in many respects" (p. 1). If this is so, educators must re-evaluate and revise their approach to meet the new climate regarding gender and learning. Gender equity is an issue critical to students, schools, and society. "If we are to prepare a work force built upon the talent of all of our students, gender equity will need to become a mainstream issue in education research and efforts to reform and restructure schools" (Sadker et al., 1991, p. 31).

Gender Differences in Achievement

According to Guo and Leahy (2001) gender gaps exist between boys and girls in achievement throughout their early years of schooling. These gaps begin to emerge significantly by early adolescence (Guo & Leahy, 2001). Information gathered from research on this topic was pertinent as this study addressed students in early adolescence.

Gender differences in achievement have attracted the attention of educators over the last three decades. Research has been conducted all over the world including the United Kingdom, Canada, Germany, and the United States to compare the scholastic ability of boys and girls in math, language arts, and science (Van de gaer, Pustjens, & Van Damme, 2006). The findings from these studies over the years have created a shift in concern from gender to gender.

The feminist movement of the 1970s brought much attention to the underachievement of girls in math and science (Taylor, 2004; Wiens, 2006). Supporters claimed women were underrepresented in math-and science-related careers and attributed this to gender stereotyped beliefs (Selimbegovic, Chatard, & Murphy, 2007). Studies found that girls enjoy math and science less than boys and experience more anxiety and

shame when they perform poorly (Kerr & Robinson-Kurpius, 2004; Muzzatti & Agnoli, 2007; Preckel, Goetz, Pekrun, & Kleine, 2008).

Researchers attributed this to a lower "self-efficacy in stereotypically masculine domains" (Kenney-Benson, Pomerantz, Ryan, & Patrick, 2006, p. 13). Studies such as these created a sense of urgency to address these stereotypes in the classroom to promote math and science achievement in girls (Kerr & Robinson-Kurpius, 2004). Since these efforts, girls have begun to improve significantly and are closing the gap in math and science achievement (Kerr & Robinson-Kurpius, 2004).

When at one time the concern centered on girls' achievement, it now appears that they are winning the academic race and are outperforming boys on many measures (Van Langen et al., 2006; Wiens, 2006). Rather than narrowing the gender gap is as wide as ever in language arts, with boys' achievement on a steady decline (Van Langen, Rekers-Mombarg, Dekkers, 2006; Vickers, 2005; Wiens, 2006). This attention began to shift from girls to boys in the 1990s as studies found that boys appeared to be weaker in language skills (Jones & Myhill, 2004). This gap in literacy emerges considerably by ages 10-11 (Bearne & Grainger, 2004; Taylor, 2004; Van de gaer et al., 2006).

A study by Burgess, McConnell, Propper, and Wilson (2004) analyzed the gender gap in adolescent children and found that boys performed considerably lower than girls in language arts. In a gender comparison of reading abilities, Chiu and McBride-Chang (2006) found girls outscored boys in all 43 countries tested. Kolic-Vehovec and Bajsanski (2006) found similar results when they also tested the text comprehension of boys and girls. As a result of research findings, educators are not searching for best reading practices for boys.

Girls appear to be stronger in language arts while boys appear to have strengths in the subjects of math and science. Addressing these gender gaps is critical to targeting the specific needs and building on the strengths of boys and girls (Taylor, 2004). The following sections offer possible reasons behind the increasing gender gap and strategies to decrease it.

Reasons Behind the Gender Gap

A review of the literature suggests several reasons behind the achievement differences between boys and girls. One of the key reasons centers on the stereotyping of boys and girls. Society tends to influence the actions, identities, and behaviors of its inhabitants. Wiens (2006) asserts that "the difference between the masculinization of boys and the feminization of girls lies in the models and expectations society provides for each gender" (Wiens, 2006, p. 16).

Girls are often stereotyped as being better readers, writers, and spellers (Whitehead, 2006). They are also expected to behave, listen, and participate in school (Davies & Brember, 1999; Engles, Aelterman, Schepens, Van Petegem, 2004; Nambissan, 2012; Whitehead, 2006). Boys are typically stereotyped as being stronger in math, science, and technology (Frenzel, Pekrun, & Goetz, 2007). It is also expected of them to be less engaged, more disruptive, and display an overall anti-school attitude (Van Houtte, 2004a; Vickers, 2006; Weaver-Hightower, 2003). Researchers also stated that teachers tend to perceive girls as high achieving and boys as underachieving (Jones & Myhill, 2004). These "pink-and-blue" stereotypes and perceptions stifle the expectations of students and are unfortunately strengthened when classrooms are blind to gender differences in learning (Sax, 2005b).

Biology may also play a role in the gender gap. The brains of boys and girls are very unlike with nearly 100 neurological differences (Guiran & Steven, 2005; Sax, 2005b). Female brains tend to develop faster than male brains, especially in the left hemisphere (Gurian, 2001; Sax, 2005b). This development allows girls to develop stronger verbal skills at an earlier age (Gurian, 2001). Male brains develop more in the right hemisphere, which provides them with stronger spatial abilities (Gurian, 2001). Utilizing this information in the classroom, practices should be adapted to accommodate the differences in how boys and girls learn. It should also be understood that since male and female brains mature in distinct ways and speeds, boys and girls would acquire various learning concepts at different rates (Burgess et al., 2004).

Hormone levels also differ significantly in male and female brains. While testosterone is dominant in boys, progesterone and estrogen are dominant in girls (Gurian, 2001). These differences can directly impact student performance. Gurian noted:

> When female estrogen is high, a girl scores higher on both standardized and in-class tests than when it is low. When male testosterone is high, the boy performs better on spatial exams, like math tests, but worse on verbal test. (p. 29)

Dramatic shifts in these hormone levels during puberty could be a valid reason behind the gender gap that transpires during adolescence.

Another possible reason the gender gap emerges at adolescence could be related to peer influences. As children get older the influence of peers increases (Merisuo-Storm, 2006). Peers become more important than parents at adolescence as boys and girls seek to conform in order to gain acceptance and a sense of belonging. The onset of

puberty and heightened peer pressure places many demands on a student that often affects achievement (Merisuo-Storm, 2006).

Girls become especially vulnerable during adolescence in terms of self-esteem and anxiety due to a convergence of biological, psychological, and physical changes brought on by puberty (Brutsaert & Van Houtte, 2004). At pre-adolescence, many girls begin to decline in achievement, especially in math and science (Salomone, 2006). Muzzatti and Agnoli (2007) further supported this claim and stated that girls lose confidence in math, as they get older as a result of gender stereotyping. Learning can be further compromised as romantic relationships in early adolescence can lead to psychological problems such as eating disorders, low self-esteem, and depression (Barrell, 2009).

By adolescence, boys tend to assert that scholastic achievement is not 'macho' and project an attitude that education is not important (Jones & Myhill, 2004; Whitehead, 2006; Younger & Warrington, 2006). Overall, motivation and positive attitudes toward school begin to weaken as boys are affected more by peer pressure (Safford, O'Sullivan, & Barrs, 2004; Van Houtte, 2004b). Low-performing boys compensate their masculinity and oppose school even more (Jackson, 2003; Van de gaer et al., 2006; Van de gaer et al., 2007; Whitehead; Wiens, 2006). When their confidence is compromised, struggling boys tend to start acting out and behavior declines (Taylor, 2004). Whitehead (2006) stated:

> The attitudes that boys bring to school, therefore, can project them into a downward spiral - low levels of school engagement leading to non-participation and academic failure which in turn reinforce low levels of participation and failure to engage with school tasks. (p. 259)

The findings suggested that peer pressure could have a direct impact on student achievement. This research also provided additional support to explain why gaps in achievement begin to appear at age 12 (Guo & Leahy, 2001).

Strategies to Reduce the Gender Gap

Researchers recommend gender-specific instruction as a means to meeting the differentiated needs of boys and girls in the classroom (Daly & Defty, 2004; Jackson, 2002; Martino, Lingard, Mills, 2004; Van de gaer, Pustjens, Van Damme, De Munter, 2004; Warrington & Younger, 2001; Younger & Warrington, 2002). To create optimum environments researchers strongly advocate providing teachers with professional development in gender learning differences and gender-inclusive instructional approaches (Gray & Wilson, 2006; Herr & Arms, 2004; Martino, Mills, & Lingard, 2005). Integrating instructional strategies and approaches that address gaps in achievement can help to alleviate this educational dilemma (Gurian, 2001).

To address the gaps in reading achievement in boys, recommendations from previous research offered many suggestions. To promote reading as a positive activity for boys, Taylor (2004) provided the following ideas:

1. Establish boys only book clubs to give boys choice over reading material and discuss at their own pace.
2. Label a bookshelf in the classroom as the "Great Guy Reads" to point out books boys would enjoy.
3. Assign drama tasks to help boys talk about books indirectly.
4. Invite male role models to have book talks with boys to promote reading is as a masculine activity.

5. Promote reading for information and computer literacy as masculine reading.
6. Carefully scaffold other literature in with boys' other reading interests to expose them to a variety of texts.
7. Give boys choices with texts.
8. Model with think alouds on how to interpret hidden meanings and themes in literature.

Smith (2004) analyzed the reading habits of six boys over a 2-year period. The researcher found that reading could be encouraged in boys through masculine, nonfiction texts. Merisuo-Storm (2006) supported the notion that boys prefer reading factual books and stated that boys also prefer books with humor, short chapters, and cliffhanger endings. The author further suggested providing boys with reading material in the classroom that students traditionally read outside of school, such as recently published series books, books based on movies and television series, specialty magazines, and comics.

A study by Oakhill and Petrides (2007) analyzed scores on a reading test and determined that reading interest significantly impacted the performance of boys on reading assessments. Boys performed consistently lower on tests that had passages that did not interest them. The researchers recommended creating balanced assessments that test nonfiction and fiction comprehension with texts that interest boys.

Girls have specific needs as well. Although the girls' achievement gaps in math and science appear to be closing (Van Langen et al., 2006; Wiens, 2006), researchers

continue to endorse strategies that promote the success of girls. Gurian (2001) offered key components for creating a girl-friendly classroom:

1. Teach math and science through concrete objects and manipulatives.
2. Teacher higher levels of math through graphs, charts, and written materials on paper rather than just on the board.
3. Tell stories and use images of women who are in typically male-dominated careers.
4. Give access to technology, computers, and the Internet.
5. Match math and science lessons with journal writing so that girls can use their writing strengths to help them process math calculations and science data. (p. 197-198)

In math, teachers should also provide girls with real-world applications to alleviate abstract concepts in number theory (Sax, 2005b). Girls use the cerebral cortex for spatial concepts like geometry and other math functions, while boys use the hippocampus. The cerebral cortex is the most advanced area of the brain and is used for communicating and higher cognitive functions. Connecting these tasks to higher cognitive functions by using real-world examples will increase math interest and performance significantly in girls. The same can be said for abstract science concepts.

Although Gurian (2001) and Sax (2005) maintained that genders have specific needs, all students are unique individuals. Therefore it is essential to develop approaches that support the achievement of boys and girls through close monitoring and observations (Bearne & Grainger, 2004). According to Gurian (2001), the "ultimate classroom can be a place where bonds run deep, conflicts are resolved, no child is left behind, any gender

biases are noted, and teachers are trained to move beyond hidden prejudice against either boys or girls" (p. 198). His study made every effort to create these ultimate classroom environments. It aimed to show that single-sex classrooms paired with gender-specific teaching strategies can help boys and girls overcome obstacles that cause the achievement gap in adolescence.

Arguments in Favor of Single-Gender Classrooms

Younger and Warrington (2002) state that single-gender instruction has the potential to raise achievement levels. Different teaching approaches must be included for achievement levels to reach their full capacity (Younger & Warrington, 2002). Women are less aggressive and competitive and more emotional and cooperative than men (Kaminer, 1998). This view further supports the separation of the sexes. Girls are not shortchanged but fare better in single-sex schools (Kaminer, 1998).

The Walker School, a private co-educational school in Marietta, GA, offered single-gender classes. The school administrators admit that girls' performances in separate classes have not made a noticeable change, but the number of girls electing to take higher level math and science classes has increased. Before single-gender classes, only about one third of the girls signed up for higher-level courses. After single-gender classes were offered, about 45% to 55% of the students in advanced math and science classes were girls (Archer, 1998).

The AAUW alleged (as cited in Black, 1998) that separating the genders does not help improve the performance of girls. In the AAUW study, claims are made that boys and girls begin school with equal skills but by high school age, girls fall behind in math and science. The study demonstrated evidence that girls must tolerate discrimination by

teachers, textbooks, and male students (Black, 1998). Still this allegation does not dissuade the teachers or administration at the Walker School from grouping students by gender. The teachers and administrators feel that their teaching methods have been broadened to better help boys and girls because of experiences from single-gender classroom grouping (Archer, 1998).

According to Sommers (2001) boys have better spatial reasoning than girls and girls have better verbal skills than boys. Boys are drawn to rough play while girls prefer more nurturing activities. The focus has been on girls and their inability to be more aggressive, analytical, and competitive. Educators should change their focus to observe and study the ways girls learn instead of how they approach math, science, and technology. Subjects such as math need to be connected to real-life situations to which girls can relate. For example, instead of discussing how a baseball field is in the shape of a diamond, certain decorative borders or fabrics from different cultures could be collected and analyzed for isometrics (Pollina, 1995).

A team of teachers at the Marsteller Middle School in Manassas, VA recognized that research shows that girls tend to lag behind boys in math and science. They suggested that their eighth-grade students be grouped by gender for two periods a day in math and science. Students were then randomly selected for participation in these eighth-grade classes. The students were informed of the study and the reasons for the experimental classes. Support for the program was good both among parents and students. No parent asked that his or her child be removed from the single-gender classes (Perry, 1996).

The program was evaluated at the end of the first 9-week term. Girls said that they felt less inhibited to speak out in class. They did not feel the need to impress anyone with clever remarks. Teachers said that girls in the all-girl classes participated more in discussions and expressing opinions. The results were very similar for the boys in the all boy classes. There was fewer discipline infractions reported to the principal's office from the gender-specific classes than in the co-educational classes. There were no comparisons made of achievement in math or science; however, overall grades were higher in the single-gender classes than in the co-educational classes (Perry, 1996).

The former principal of the Marsteller Middle School said the research was not conclusive in determining the effectiveness of single-gender grouping. He said that it was, however, very apparent that there are many positive benefits for both boys and girls when they are separated by gender (Perry, 1996). Most educators agree that boys and girls have different learning styles. Boys react quicker than girls and will sometimes blurt out answers without much thought. Girls are more reflective than boys and they think about responses before offering an answer. Many times the boys have already answered the questions before the girls have had an opportunity to ascertain their responses (Archer, 1998). Being in all-boy classes allows boys the freedom to discuss feelings and issues on a deeper level. They would feel uncomfortable if girls were present. Their masculinity is not threatened in the absence of girls (Martino & Meyenn, 2002).

Benjamin Wright became the principal of Thurgood Marshall School in Seattle, WA, in 1998. This school was performing below academic standards (Schachter, 2003). Mr. Wright began single-gender grouping and after 3 years, single-gender public education was making a difference, especially to low income and minority students. Mr.

Wright believes that each child's needs are different and can best be met when the sexes are isolated (Schachter, 2003). Principal Wright believes that many boys learn kinesthetically. They are more active than girls and need more opportunities to express responses and ideas in participatory modes (Schachter, 2003).

Wright first began by separating genders in fourth grade and then in the entire school. The initial results showed that the state achievement test scores rose sharply. In 2000, only 27% of the students in mixed-gender classes met the state average for reading and only 11% for math. In 2001, the reading score increased to 51% and in 2002, they increased to 60%. Math scores declined in 2001 but showed that 45% of the students met the state standards in 2002 (Schachter, 2003). One teacher at Thurgood Marshall said that she asks her female students to draw a picture of a mathematician. She said that at the beginning of the year almost all of them would draw pictures of men. At midterm, many of them draw pictures of themselves (Schachter, 2003).

When the federal government learned of Mr. Wright's decision to split classes into single-genders, they said that he was in violation of Title IX. However, instead of making an effort to prohibit the single-gender classes, the United States Department of Education decided to follow Wright's example by educating some boys and girls separately to see if this would be another option for education (Davis, 2002).

Former Governor Pete Wilson of California in 1998 believed that homogeneous grouping would foster academic achievement, student retention, and safe/orderly schools. He promoted single-gender schools as another choice for students. He held that single-gender classes would eliminate romantic distractions and promotes better learning for boys and girls (Chmelynski, 1998). Administrators of all-boy schools say single-gender

schools can be a buffer zone against gangs and other problems found in violent neighborhoods. This is especially true for boys from poor and minority backgrounds. Boys in single-gender classes drop their tough attitudes and are more willing to learn through cooperation and teamwork (Black, 1998).

Haag (2000) agrees that girls in single-gender classes are more likely to enjoy subjects like math and science versus girls in mixed-gender classes. Boys in all-boy classes show a stronger preference for the subjects that have historically been considered feminine such as music and art (Haag, 2000).

Janet McKay, former president of Mills College in Oakland, CA was appointed to the position when the college was in crisis. The 150-year-old all-female college was closed for 16 days because angry students were protesting a decision to admit men to the college. The leaders of the college were looking for increased enrolment and revenues. After national publicity and debate, the decision was reversed. No men would be allowed at Mills College (Holmstrom, 1994). McKay says that all-female classrooms are important because of the uniqueness of the experience.

Women in co-educational settings take longer to develop confidence in the subject matter. The training in all-women classes gives them confidence to express their own ideas and to be risk-takers (Holmstrom, 1994). Eighty percent of the girls studied claimed that they were more confident in homogeneous groups than in mixed-gender groups. They said that they enjoyed math more without male interference in the classroom and the classroom was more relaxed (Jackson, 2002).

A qualitative study conducted at the University of Arizona examined data collected in an all-female physics class and in co-educational classes taught by the same

teacher in the same school. Information was considered from interviews and observations. Girls in the all-female class made significant gains in achievement and increased their perception of themselves as competent students (Streitmatter, 1998). The girls were asked about their experiences in the all-female class and how they felt about science. They were also asked about their post high school and college plans. Quotes used for the study were representative of the feelings of many of the subjects studied (Streitmatter, 1998).

The structure of the classes and assignments given were basically the same. Some girls felt isolated and requested more group work. The most prominent difference between the classes was the interaction between the students and the teacher. In the mixed class, the boys were domineering. They shouted out answers causing the teacher to make attempts to redirect their behavior. The girls in the classroom tended to talk to each other about things other than the lesson. As the teacher walked around the room, the boys' interactions showed they were not concerned with their work. Some interactions with girls were not related to the subject matter (Streitmatter, 1998).

In the all-female class, the teacher did not have an opportunity to walk around the class. The girls were assembled into groups that frequently changed in composition. They stayed close to the teacher's desk asking numerous questions. All of the girls in the study reported that they would recommend the single-gender class to their friends. They said that the class was fun and learning was easier than it would have been in a class with boys (Streitmatter, 1998).

In a study by Martino and Meyenn (2002), a teacher who had been teaching for 8 years indicated that boys in all-male classrooms worked well in small groups. He said

that a very trusting and supportive environment had been created in his classroom of all boys. Boys are quick to encourage each other to try different ways to achieve tasks. By removing girls from his classroom this teacher finds that boys are more apt to be involved and be active participants in the class. He said that 90 % of his all-male students would raise their hands to answer questions anytime they are asked (Martino & Meyenn, 2002).

The teachers felt that the absence of girls in the all-boy classroom facilitated better male bonding. The boys had a need to be accepted by each other. Teachers are more able to encourage boys to discuss issues of masculinity and think critically about the social edifice of gender. All-boy classes redirect the focus from girls to academics (Martino & Meyenn, 2002). In- depth interviews with college students substantiate claims that co-educational classes are more like real life. These students say that co-educational classes in high school provide the experiences needed to move properly into mixed environments of universities or employment (Robinson & Smithers, 1999).

A new 2-year study of single-gender education by the United States Department of Education is the first comprehensive study of its kind in the United States. The department denies advocating single-gender grouping but does admit that it is another option for students and parents (Davis, 2004). The $1.2 million study examined all-male schools and all-female schools and not schools that may have one or two grades divided by gender. It focused primarily on children who are at risk for academic failure. Michael J. Petrilli, an associate deputy undersecretary at the Department of Education, said that the evidence in support of single-gender classes is limited and that we should learn more about its effectiveness (Davis, 2004).

In 2012 the Broward school district started a pilot program offering all-boy and all-girls classes as an option at six schools, which still provide co-ed classes as well. Though experts debate the merits of single-gender classes some argue there is no clear evidence they succeed. Administrators and teachers said they had seen them dramatically improve the performance of some students. In South Florida, there are four single-gender Catholic schools stemming largely from tradition. Isensee and Vazquez (2012, as cited in The Miami Herald, 2012) shared that at Our Lady of Lourdes Academy, Principal Sister Kathryn Donze said the success of a school relies on more than being all-girls or all-boys. It's about mentoring students, having a strong faculty, and instilling work ethic.

At Charles Drew Elementary in Pompano Beach, classrooms are decorated with colors designed to make each gender more comfortable: blues for boys, yellows and reds for girls. Both genders are given occasional brain breaks. For girls that might mean five minutes to chat with classmates. For boys, it might mean a change to wiggle around a bit. Charles Drew and the other five Broward schools (Dillard and Martin Luther King Elementary Schools and Boyd Anderson, Everglades and Nova High Schools) are participating voluntarily, as are the parents. Broward officials are open to expanding their single-gender classes and also hope to study one of the biggest criticisms of such environments, namely, that they stunt social growth. Broward is collaborating with Stetson University to explore a potential 5-year, grant funded study. The goal is to examine the before and after characteristic of single-gender students including social skills (Isensee & Vasquez, 2012).

According to Kieffer (2010), Tupelo and Lee County elementary schools might have the option of choosing all-male or all-female classes in 2011. Lee County School

District has given its Kindergarten through fifth-grade schools the option of adding single-gender classrooms. Male classrooms would employ more movement-based learning, while female classes would use more visual strategies. Students would also read books about topics that are more likely to appeal to them. Tupelo's third-to-fifth grade schools also are considering different pilot programs that would include single-gender classrooms composed. Under all of the initiatives being studied by both districts, single-gender classes would consist only of those students who chose them.

Arguments Against Single-Gender Classrooms

Co-educational advocates do not characteristically maintain that co-education is pedagogically superior. The proponents argued that co-educational schools better prepare youth for cross-gender interactions and integration into society because they reflect real world social interactions (Mael, 1998). Many assert that co-educational schools are fairer because single-gender female school have, in past times, received less funding and resources than their single-gender parallel schools that serve male students (Hansot & Tyack, 1988).

The AAUW published a report entitled *Separated by Sex* in March 1998. This report stated that generally single-gender education is no better than co-educational education. Patricia Campbell worked on the report and advised that single-sex schools are not a quick fix that will guarantee positive results for students (Black, 1998). Susan Black is a contributing editor of the *American School Board Journal*. According to Black, the AAUW feels that single-sex classes can cause inadvertent consequences such as negative effects on social equality. They also say that all-female schools are sexist (Black, 1998). The AAUW further states that the body of research that exists regarding single-gender

grouping is inconclusive and educating the sexes separately has not been proven to be more effective (Archer, 1998).

Black found that socioeconomic status is the single most powerful predictor of how kids will progress in school, not gender. Children who do not get the benefit of good nutrition, books, music, and other enrichment activities at home will likely start school behind classmates who come from more affluent families. Those who come from poor families are more likely to become identified as special education students and/or drop out of school and end up with dead-end jobs (Black, 1998). Robinson and Smithers (1999) agreed with Black that academic selection, socioeconomic background, and the standing of the school itself have more to do with outstanding school performances than segregation of the sexes. When comparisons are made of homogeneous and mixed classes in similar schools, the academic differences virtually disappear (Black, 1998; Robinson & Smithers, 1999).

Jeffrey Weld taught high school biology (as cited in Black, 1998), and he believes that girls and boys achieve equally in math and science until they reach middle school age. Because of the way material is presented, girls are thrown out of the learning loop. Teachers explain content to boys as if they will be engineers and explain the same content to girls as if they will be homemakers. This bias cannot be overcome by separating the sexes. Black believes that there are deficiencies in curriculum and instruction that must be corrected with staff development in gender equality (Black, 1998).

Educators say that girls' feel more relaxed in single-gender classes and can benefit from this type of class, but all-male classes are conducive to more fights and an

increase of bullying. It seems that weaker boys take the place of girls and become the brunt of proving stronger boys' masculinity. This environment does not promote achievement for boys (Datnow, Hubbard, & Woody, 2001).

Some opponents of single-gender classrooms believe that single-gender schooling can be detrimental to female students. "Separating the genders…could result in girls seeing themselves as unable to compete in the real world" (Vail, 2002, p. 35). Others content, "boys and girls must learn to get along together in the world…separating them will take away that opportunity" (p. 35).

Datnow tested single-gender education in six California schools. She and her colleagues interviewed over 300 middle and high school students, their teachers, and their parents. Girls in homogeneous classes seemed to be *catty* and were allowed more freedom while boys taunted one another. Strife was not eliminated by removing the opposite sex (Datnow, Hubbard, & Conchas, 2001). Evidence from well-documented and methodologically sound research found that girls in single-gender groups found their classes to be boring and not enjoyable compared with their mixed-gender classes.

There have been some attempts to rationalize boys' participation in literacy and how it is hampered by the female persuasion. Martino and Meyenn (2002) talked with a group of teachers regarding how they approach the task of teaching boys and girls in homogeneous classrooms. Teachers produced an echolalic analysis of strategies designed to enhance boys' participation in English. They spoke of improved classroom learning environments for both genders, modification of pedagogy to reinforce gender stereotypical behaviors, modification of curriculum content to accommodate different interests, and enhanced curriculum decision-making environments to address specific

gender issues. However, the boys who did not meet the masculinity expectations were more at risk for harassing behaviors than their female counterparts (Martino & Meyenn, 2002).

Although there are numerous positive outcomes related to gender segregation, the opponents of such schooling are adamant in their passion against single-gender education, and have provided legal rationales that support their opposition. Court cases have been cited in support of those opposed to single-gender education:

Civil rights groups and other organizations insist that the proposed changes raise the specter of a new kind of segregation. Comparing the single-gender schools to the racially segregated schools that were in place prior to *Brown v. Board of Education*, they say the Supreme Court's 1954 decision that "separate educational facilities is inherently unequal" applies to single-gender school (Vail, 2002, p. 33).

The ACLU filed complaints on December 6, 2012 with the federal Department of Education's Office of Civil Rights (OCR) against two school districts in Alabama and Idaho running unlawful single-sex education program. Through the information obtained through the ACLU the program appears to violate federal law by forcing students into a single-sex environment and deprive students of equal educational opportunities merely because of their sex. The programs in Middleton Heights Elementary in Middleton, Idaho and Huffman Middle School in Birmingham, Alabama are based on the theories of Sax and other proponents of single-sex education, whose discredited theories on the supposed differences between boys' and girls' brains are rooted in archaic stereotypes (ACLU, 2012).

In Middleton, the single-sex program has been in place since 2006 and draws on stereotypes that men are active and independent while women are passive and dependent. The school plans the boys' day to include exercise and movement, while the girls are provided with quieter environments. The school maintains its single-sex programs are voluntary, it provides no written information to parents about how to exercise their option to put their students in a single-sex or co-educational class. Internal polling of parents in 2012 found 48.6 percent believed they did not have a choice about the classroom type. Executive director of the ACLU of Idaho stated that these programs have not made a difference academically but they have supported the archaic ideas of what is considered the norm for boys and girls (ACLU, 2012).

Birmingham City Schools' studied the academic achievement at Huffman and concluded there is no definitive proof that the percentage of students scoring proficient significantly impacted by students that were in a same gender classroom setting. The single-sex program at Huffman continues as of 2012. The ACLU is asking OCR to investigate the programs and bring them into compliance with the law. The ACLU wants OCR to provide guidance to all school districts and make clear that the 2006 Title IX regulations do not authorize schools to adopt programs based on gender stereotypes. Instead schools must provide specific justification for every single-sex class offered (ACLU, 2012).

A school board in Vermilion Parish, Louisiana has agreed to halt a middle school program that segregated core curricular classes by sex through at least the end of the 2016-2017 school year. The agreement is part of a settlement between the Vermilion Parish School Board and clients represented by the ACLU, the ACLU of Louisiana, and

Debevoise & Plimpton LLP. The original lawsuit charged that the program at Rene A. Rost Middle School in Kaplan, LA violated federal laws, including Title IX and the Equal Protection clause of the Constitution, and alleged that the schools program was based on flawed data, relied heavily on gender stereotypes and had no positive effect on academic performance. In addition to the abandonment of the program, the school board has agreed not to institute sex-segregated programs at any of the 19 schools in Vermilion Parish through the 2016-2017 school year and must notify the ACLU if it intends to revive sex-segregated activities at any school during the 2017-2018 or 2018-2019 school year (ACLU, 2012).

If the ACLU had its way, Mississippi school districts offering same-sex classes would stop doing that by the beginning of Fall 2012 classes. ACLU leaders in Mississippi have not approached any districts with a demand, but the group did send public records requests to several asking for documentation on such class configurations, according to ACLU of Mississippi staff attorney Amelia McGowan (Ingram, 2012).

Leadership and Implementing Single-Gender Education

McNeil (2008) stated that Tim Rex, South Carolina's State Superintendent of Education, pushed for statewide single-gender programs as a means of improving test scores and boosting public school choice. Additionally, Superintendent Rex appointed the first and only statewide coordinator of single-sex initiatives (McNeil, 2008).

McNeil (2008) reported that a new principal in rural South Carolina who was desperate to improve test scores and decrease discipline problems without spending any money decided to simply divide the boys and girls into separate classrooms. However, McNeil stated, according to Sax, the executive director of the NASSPE, bad things

happen when the decision is made to place boys in one room and girls in another without teachers receiving any preparation.

McNeil (2008) noted that teachers should receive proper training on the research that explains which teaching strategies are best suited to the various ways that boys and girls learn. According to McNeil, David Chadwell, coordinator of single-sex initiatives in South Carolina, stated that the two most important factors that ensure success of single-sex initiatives are administrators and teachers that are willing to explore and try new innovations.

Experiences of Teachers and Students in Single-Gender Learning Environments

According to Perry (1996), teachers inadvertently show bias against female students. A presentation by the AAUW showed highly qualified teachers instructing a class. Even though the teachers knew what the researcher was observing, they showed gender bias. There should be no bias in the schools, but it is apparent that it does occur (Perry, 1996). An October (1998) report by the AAUW found that gaps between boys and girls in technology, science, and math could disadvantage girls as they confront today's societal demands:

- Boys enter the classroom with more prior experience with computers and other technology than do girls.
- High school boys are more likely than girls to take all three-core science courses-biology, chemistry, and physics-before they graduate.
- Girls take fewer computer science and computer design courses.

- Girls cluster in traditionally female occupations in school-to-work and vocational education programs (Black, 1998).

As noted previously, single-sex classes in co-educational schools have been implemented for a variety of reasons. Previous middle and high school dissertation studies have explored gender issues in the classroom and found separating boys and girls may benefit students who are intimidated by or disadvantaged in traditional co-educational learning environments (Gilroy, 1990), or overshadowed by inequities in male and female call outs (Carmody, 1997).

Girls seem to gain emotional benefits from single-sex classes. Females in single-sex high school classes reported lower anxiety and greater confidence in science (Cipriani-Sklar, 1996) and improved attitudes toward school (Gilroy, 1990). Learning behaviors and the classroom atmosphere can change in all-girl classes. Female students in single-sex classes identify more closely with peers, become more involved in their own learning, participate eagerly in cooperative learning behaviors (Burns, 1998), and demonstrate improved, positive attitudes toward academics (Lee & Bryk, 1986).

A revival of single-gender classes began after the study by the AAUW. The study found that schools often disregard bias toward female students and girls lose self-esteem during their middle school years. The study further found that as a result of the gender bias, girls do not perform as well as boys in math and science (Archer, 1998). Bias against girls is present in almost every mixed-gender classroom. Teachers are not intentionally prejudiced but bias occurs unconsciously (Perry, 1996).

Some evidence suggests single-sex instruction may benefit students (Mael, 1998). Lee and Bryks (1986) often cited Catholic school study, *Effects of Single-Sex Secondary*

Schools on Student Achievement and Attitudes, concluded that students, especially females, could benefit from single-sex schools that provide "an environment where social and academic concerns are separated" (Lee & Bryk, 1986, p. 381). In their study, students in co-educational schools did not perform at higher levels in any achievement measure in comparison to students in single-sex high schools (Lee & Bryk, 1986). Lee and Bryk also found that the academic benefits were different for boys and girls. Although the results were stronger for girls, a positive effect from single-sex schools still existed for 10th-grade boys. The positive effect for boys, however, was "somewhat diminished" by 12th grade (Lee & Bryk, 1986, p. 388).

In a middle and high school all-girl setting, girls ask more questions and take greater risks (Sadker & Sadker, 1994). Streitmatter (1997) spent 2 years studying girls' behaviors in girl-only math classes created within a co-educational public school. Streitmatter (1997) effectively wove a justification for her study through a clear historical perspective, discussion of ramifications of political legislation such as Title IX, and a review of significant pieces of previous study and literature. In this justification, Streitmatter (1997) notes that previous studies do not necessarily endorse single-sex instruction for student achievement, but that quantitative research does not examine the impact of single-sex instruction on girls' confidence, career aspirations, and the "sense of being invisible" in co-educational classrooms (p. 17).

Streitmatter (1997) suggested that a qualitative study that examines girls' feelings could contribute to current information regarding girls' success and single-sex instruction. Streitmatter (1997) sought to explore "whether and how this single-sex math class might affect girls' academic risk taking" (p. 18). Ideas related to risk taking such as

cooperative learning behaviors, career goals, teacher behaviors, and parent expectations are addressed throughout the study. Streitmatter (1997) found that girls' preferred the single-sex environment, gained positive perceptions of their learning abilities and roles as mathematicians, and were more likely to ask and answer questions than they were in their co-educational classes.

Studies focus on a variety of success definitions: achievement, attitudes, aspirations, course selection, or other learning behaviors. Perhaps if the definition of success is broadened to contain more elements than academic progress, less disparity may actually exist between the sexes than first appears. Riordan (1990) asserts that "the structure of schooling has different effects on the educational outcome of males and females: and the gender context of school affects what males and females gain from the experience" (p. 8). Riordan (1990) surmised that single-sex schools, not co-educational schools "provide a better environment for personal growth and happiness" (p. 133). In regard to academic achievement, however, Riordan's study results found that boys in single-sex and co-educational school performed similarly in terms of academic achievement, while girls in single-sex schools outperformed girls in co-educational schools.

In another study conducted by Garcia (1998) girls from a single-sex public high school were compared with girls from a similar co-educational public high school. While both were public schools, it should be noted that Garcia described them as highly selective. Garcia found no significant differences in achievement between the girls in the single-sex and co-educational schools. Girls performed as well as or better than White boys (the author uses this comparison stating that White boys are assumed to have all the

advantages in co-educational schools) on GPA as an academic measure, but showed lower performance on SATs. Single-sex schools, according to Garcia, should become one option for young female students; no type of school will meet everyone's needs and students needs vary educationally. These opportunities are seen in the existence of schools for technology, science, and the performing arts. Similarly, co-educational and single-sex schools may not be for everyone but can benefit select students (Garcia, 1998).

Reports vary regarding academic achievement and the value of single-sex classes. Single-sex instruction, in comparison to students in co-educational classes, did not result in statistically significant levels of mathematics achievement (Wear, 1997). Although not statistically significant, boys in single-sex classes developed a more positive attitude toward mathematics. Yet, while all students were positive about their experiences in single-sex classes, only half said they would choose that arrangement again (Wear, 1997). This is in conflict with Streitmatter's (1997) findings in her all-girl study that all but one female student would select a single-sex environment again. In comparing class preferences to achievement scores Wear (1997) notes that girls who preferred the all-girl class were ranked in the middle two quartiles of the class academically. These girls, according to Wear (1997), felt the all-girl environment was more conducive to learning and eliminated intimidation from boys.

Experimentation with single-sex class structures does not only exist in language arts and mathematics classes. In Great Britain, some schools have separated male and female students in the foreign language cohorts in response to disparate achievement (Noble & Bradford, 2000). However separating by gender carries a price boys and girls bring separate strengths to class that the opposite gender could benefit from experiencing.

Girls need to take more chances and volunteer more, and boys need to reflect on their work and listen more often. Co-educational schooling is often seen as beneficial to the social development of adolescents (Noble & Bradford, 2000).

It is important to note that conflicting reports exist regarding the success and value of single-sex instruction. There are limited reports of increased grades (Gilson, 1999; Wilson, 1996) and reports that while girls' attitudes toward math changed (Streitmatter, 1997; Wear, 1997) grades were not impacted by single-sex instruction (Flanders, 1992; Wear, 1997). In addition, while final grades may or may not change, girls who have participated in single-sex instruction are more apt to enroll in upper level math courses in a later grade (Campbell & Evans, 1997).

While opposing views exist regarding the effectiveness and appropriateness of single-sex instruction in public schools, many educational experts agree that separating students by gender deserves consideration as one option for addressing gender inequities (AAUW, 1995; Hansen, Walker, & Flom, 1995; Lee & Bryk, 1986). In general, boys in single-sex schools exhibited higher levels of self-esteem despite their similar academic performance to their co-educational peers, although variations existed for minority male students (Riordan, 1990). Riordan (1990) summarized his work with the following thought, "single-sex schools offer an environment that is more conducive to learning than mixed-sex schools, especially for women" (p. 151).

Single-gender classes may not offer a long-term substitute for gender equity in the classroom, but they may provide opportunities to build girls' confidence (AAUW, 1995; Hansen et al., 1995); reduce the influence of adolescent subculture (Riordan, 1990); and

offer temporary, data-rich situations to study in the efforts to improve co-educational schools (Sadker, 1999).

Summary

Until the 19th Century education within the United States was a single-sex affair and only boys attended school (Bracey, 2007). However, girls were admitted as a means of improving the temperament of boys (Bracey, 2007). According to Tyack and Hansot (1988), "probably the most important change in gender relationships in public education was the introduction of girls into elementary schools" (p. 34). Furthermore, authors noted, "the mixing of the sexes or co-education (coined as an Americanism in the 1850s), for example, became the standard practice in American elementary schools during the first half of the 19th Century, but it did not arouse much comment at the time" (p. 33). Tyack and Hansot (1988) noted that in the 19th Century traditionalists pushed the issue that mixed-sex schools may cause girls to be too masculine.

The elements of the NCLB and the new Title IX regulations have prompted many leaders within school districts to reexamine and restructure public school education (Chadwell, 2008; NASSPE, 2008; Pinzler, 2005). McNeil (2008) noted prior to NCLB and the new Title IX regulations, public school leaders only considered single-sex classes under certain circumstances such as physical education.

Some research suggests that single-sex schools benefit both males and females by providing students the opportunity to interact with same sex peers who are pursuing academic and leadership roles in a stronger academic climate free of distractions (Finn, 1980; Lee & Byrk, 1986). Others point out that single-sex schools particularly benefit boys, highlighting the ways in which all-boy institutions promote male bonding and

optimize male character development (McGough, 1991; Reisman, 1991; Hawley, 1993; Watts, 1994).

More common, however, is the conclusion that single-sex schooling offers more positive benefits for females than males (Moore, Piper, & Schaefer, 1993). Comparative studies of single-gender schools and co-educational schools suggest that because females have typically been disadvantaged in co-educational settings, they respond favorably in the single-gender environment. Girls who attend all-girl schools have more opportunities to take on leadership roles, to become engaged in traditionally male-dominated subjects like math and science, and to show improvements in self-esteem (Cairns, 1990; Lee & Bryk, 1986; Moore, et al., 1993; Petruzzella, 1995; Streitmatter, 1999). Some argue that girls succeed in all-female environments, which foster inclusiveness, caring, and values (Bauch, 1989). Some religious groups support single-sex schools because they enhance the moral environment for young girls and ameliorate the inequities that persist in co-educational settings Fisher (1998, as cited in Riordan, 1990; Shaikh & Kelly, 1989).

Research in the field of gender studies in education has provided invaluable insights into the role of gender in teaching and learning practices and in students' academic and social development. Yet despite significant attention to the experiences of males and females in schools, many researchers and practitioners maintain limited notions of gender (Chadwell, 2008). More often than not, girls and boys are presented as homogenous groups, uniquely different from the other. The recent interest in single-sex education embodies a dichotomous framework of gender following the assumption that females and males needs are distinctly different and cannot be met within the same classroom.

Today, women have gained entrance into almost every all-male public and private university including military schools (Kaminer, 1998). A single-gender environment allows women to enter the workforce with higher confidence levels and a greater sense of purpose. About 90 percent of the graduates of all-women colleges indicate that they would elect to make the same college choice again (Bell, 2002).

Some women are questioning the benefits of co-educational institutions. They argue that co-educational schools are detrimental to the self-esteem of girls and that they discourage girls' achievement, particularly in math and science (Kaminer, 1998). Women's organizations are concerned that single-gender schools are not the answer to equality, but could be a setback for American education (Datnow, Hubbard, & Conchas, 2001). Robinson and Smithers (1999) state that segregating the sexes does not increase educational effectiveness. They say that good schools will be good no matter the classroom configuration (Robinson & Smithers, 1999).

However, Robinson and Smithers (1999) also stated that boys tend to dominate classrooms. They say that true equality, particularly for girls, may necessitate separation of the sexes (Robinson & Smithers, 1999). Certainly there is no dispute that equal education must be given to both males and females. Women are under-represented in fields such as science, technology, and engineering. Also women make up a larger portion of the workforce. In order to keep up with a global market, women must be well trained. In addition every field must be available to women (Pollina, 1995).

It is important to understand students' adherence to individualism not as naïveté but as a struggle to maintain a sense of agency in the face of simplistic categorizations of gender. Phillips (2000) recent study of young women's experiences of harassment and

violence, academy students were eager to "believe in their own agency…seeing agency and victimization as mutually exclusive" (p. 3). The danger, of course, is that girls are being told they can accomplish anything with little practical advice to overcome hardships beyond just show the world.

> Johnnetta Cole (2003), former President of Spelman College, asks the following: So if we care about a gender analysis, where do our kids go to gender school? Where do they get the right information and examples? We need places for people to learn the lessons of gender, race, culture, and their own humanity. (p. 44)

Schools need to provide young people with a place to ask questions and receive honest answers. Efforts to empower students must be mitigated with a critical analysis of systems of oppression and an understanding of the challenges they may face on the path to their dreams.

With benefits that range from better behavior and academic success to a broader selection of scholarly pursuits, it is no wonder that there has been revitalization in the single-sex school movement in recent years. Even though many studies have shown single-sex education to be beneficial in any number of ways, there are those researchers 84 that would say the research is skewed or biased and that single-gender education is not as beneficial as co-educational learning environments.

By participating in this study, upper elementary school teachers who were currently teaching in a single-gender setting were given an opportunity to use their experience as a means of providing perceptions, opinions, and insights on the idea of implementing single-gender education in an upper elementary setting.

The average age of elementary students is 5 to 9 years old. The usual grade make-up of elementary schools is Kindergarten through fifth grade. This upper elementary school has a unique school composition by being a Title I upper elementary school. Within this setting, the students are between 9 to 12 years of age. The grade composition is third through sixth. In most school districts sixth grade students are placed in the middle school. At this particular school sixth grade is still considered elementary.

During this developmental stage (upper elementary age, between 9 to 12 years of age) girls enjoy cooperative learning groups and boys enjoy competition and challenges. Girls like open-ended tasks and boys like assignments that can be completed quickly. Girls enjoy music, drama, and dancing to express feelings and boys prefer sports or action figures to express concepts. Girls prefer reading assignments over math or science assignments and boys prefer math or science assignments over reading assignments. Girls see academic failure as a failure of self and disappointment to others and boys see academic failure as a failure of the subject. Girls tend to express themselves more through fiction and poetry and boys like short discussions and want to reach conclusions quickly.

This study also targets those administrators with an interest in transforming current co-educational facilities to facilities that also serve single-gender grouping of students. If school district leaders are interested in implementing strategies that improve academic achievement they should want to make informed decisions based on input gathered from those who have the knowledge, expertise, and experience. Thus, the purpose of this study was to give upper elementary school teachers who were currently

working in a single-gender setting along with the students and parents the opportunity to share their perspectives, opinions, insights, and interest levels regarding the initial year of implementing single-gender education in a public school.

CHAPTER III

METHODOLOGY

The purpose of this study was to examine data that was gathered from an economically disadvantaged Title I federally assisted upper elementary school with respect to the implementation of single-gender classrooms. Economically disadvantaged students are defined as those who participate in the free or reduced lunch program and are offered a daily free or reduce price breakfast and lunch. Based on limited total family income that met criteria, which qualified a family for food stamps or identified the family as having met federal poverty guidelines.

Research Design

This study was guided by the following two research questions: (a) what were the perspectives from teachers, students, and parents with the initial year of implementation of single-gender classrooms, and (b) what school level data could be analyzed and summarized with respect to student behaviors during the initial year of implementation?

An open-ended survey was used as the instrument to collect data to address the research questions. The students were selected because they were enrolled in third through fifth grade students comprised the single-gender classes for this study. However, this upper elementary consists of third grade, fourth grade, and fifth grade. The study was confined to the 2008-2009 school years. The perception studied was the initial year of

single-gender classes in a Title I federally assisted public upper elementary school. The characteristics examined were the perceptions and attitudes of the students, parents, and teachers involved in the single-gender pilot program. The participants completed the open-ended survey questions during the 2008-2009 school year.

Participants

The teacher participants were an intact group of 7 third grade teachers, 7 fourth grade teachers, 6 fifth grade teachers, 2 venture teachers, 5 activity teachers, 3 special education teachers, 1 ELL teacher. The student participants were an intact group of 140 third-grade students, 150 fourth-grade students, 178 fifth-grade students, and 12 special needs students that were severe and profound at an upper elementary school. None of these severe and profound students, their teacher, nor their parents completed a survey.

The student sample consisted of 230 females and 250 males ranging in age from 8-12 during the 2008-2009-school term. Of the total number of students, 1.4% were Asian, 18.1% were African American, 4.5% were Hispanic, 0.2% were Native American, and 76.9% were Caucasian. The number of students who were eligible for free and/or reduced lunch during the 2008-2009-school term was 330. Based on this information this upper elementary school is identified as a Title I school.

The analysis for this study was conducted on the responses of 410 student participants, 30 teacher participants, and 201 parents who provided usable responses that represented the perceptions and views of the group under investigation. Therefore, 84.4% of the participants were students, 8.8% were parents, and 6.8% were teachers.

Procedures

Data were collected from August 2008 through May 2009. This included a letter to parents (see Appendix A), an open-ended survey for the teachers (see Appendix B), students (see Appendix C), and parents (see Appendix D). The data were compiled and analyzed for the purposes of analyzing participants' perceptions and initial experience. Permission to conduct research was obtained from the Office of Regulatory Compliance of Mississippi State University was obtained (see Appendix E).

The participants completed open-ended surveys that were placed in a secure self-addressed envelope and sent directly to the researcher. Also the participants were also able to go on-line to the school's website and securely complete the surveys. In returning the completed surveys, participants were instructed not to put their name on the surveys or on the individual envelope provided. The teachers, grade level, and student names were not revealed.

Data Collection

Participants in this study included 30 teachers, 410 third through fifth grade students, and 201 parents. Open-ended questions were important to (a) understand perspective of teachers, students, parents with the initial year of implementing single-gender classrooms; (b) relevant school level data with respect to student behaviors during the initial year of implementation was analyzed and summarized. Open-ended responses were analyzed by examining common responses and responses that varied in opinion.

The advantages of using a survey were: (a) a large number of individuals can easily be tested, (b) the situation was less likely to be artificial, and (c) surveys were easy to administer. Surveys were particularly useful in determining the actual values of

variables under study and the strengths of relationships among them. This type of research gathered data from respondents thought to be representative of the population. This survey was developed and arranged by the researcher from the information found in the literature review.

In this instrument, the researcher obtained the respondents' perspectives with the initial year of single-gender implementation. The respondents indicated their preference or explained why they felt a certain way about single-gender education. Sometimes there was a need to force respondents to express a definite opinion one-way or the other. This open-ended survey allowed the respondents to chose either in the positive or negative direction and then provide an explanation as to why they chose that direction.

Open-ended questions in this instrument were questions to which there was not one definite answer. Open-ended questions were a good way to break the ice with a survey, giving respondents an opportunity to answer in their own words. The responses to open-ended questions could be very useful, often yielding quotable material (Fink, 1995).

The instruments chosen for data collection were open-ended surveys where the participants had to fill in their answers. The surveys were designed to assist the researcher in obtaining and analyzing the perspective of teachers, students, and parents in regards to the initial year of implementing single-gender classrooms at an upper elementary school. The target population for this study was limited to an upper elementary school. Replications of this study should consider the variables of age, ethnicity, socioeconomic status, and prior achievement of the participants.

Data Analysis

In this study, data analysis started as soon as the data collection process began. Data were analyzed from the teachers, students, and parents' answers to open-ended survey questions. This information was recounted in order to give in-depth descriptions concerning the research questions that were under investigation.

The survey responses were collected and organized into five categories: (a) teacher perspective, (b) student perspective, (c) parent perspective, (d) discipline incidents, and (e) student attendance data. The researcher and no one else due to the following reasons completed this entire process: (a) it helped the researcher become familiar with each situation, and (b) it aided in the integration of documents.

Responses were reported primarily based on participants' answers to the open-ended questions; thus, when necessary, direct quotations were included to make a statement. The purpose here was not to advance a certain view of single-gender education, but rather to provide a richer and more holistic understanding of teacher, student, and parent perspectives about single-gender education.

Each participant, the name of the school, and its location were not identified to ensure confidentiality. The researcher looked at the information that related to answering the research question concerning teacher perspective on the implementation of single-gender education. The researcher listed each perspective that was mentioned by each participant during the open-ended survey questions.

After listing the perspectives of the teachers, students, and parents, the researcher tried to find the "common ground" among them. The researcher gathered similar perspectives reported by more participants as a major perspective and then categorized

those perspectives as themes, and this process is called cross-analysis. As a result, the following three primary perspectives were common: (a) lack of professional development on single-gender education prior to implementation, (b) lack of training on classroom management, and (c) parents were not included in the decision-making process prior to implementation.

Validity

This was the researcher's first endeavor with conducting research. This was also the first time the researcher conducted research within a public school setting in general and with single-gender education in particular. The researcher's lack of experience allowed for fresh eyes, without expectations or stereotypes regarding what was heard or seen from participants' comments. To address these concerns and indicate that the data collection was trustworthy, the researcher adapted the three lenses strategy to enhance the level of trustworthiness: the lens of participants, the lens of the researcher, and the lens of people external to the study (Creswell & Miller, 2000).

Lens of the researcher: to indicate that the data collection was trustworthy, triangulation was utilized to compare data across varying sources (i.e., open-ended responses) and different perspectives. The researcher gained insight from analyzing related documents (responses to open-ended survey). For example, a fourth grade language arts/reading teacher had a well-documented notebook for documenting discipline issues that arose in her male classrooms along with what she did to resolve the problem(s). What appeared in her notebook was consistent with what the researcher observed when visiting her classroom (while completing teacher required drop-in observations) and her responses to the open-ended survey.

The researcher used the insights gained to examine, clarify, and amplify the meaning of the data, as well as helping me address the various research questions. In addition, the researcher gathered data from multiple perspectives (i.e., teachers, parents, and students) to safeguard any potential bias from one side.

Lens of participants: the rapport that the researcher had with the teachers, students, and parents, lead them to speak in a more honest manner where they did not worry if they would judged negatively. In addition, during personal interactions, the researcher expressed attentive skills, such as listening, paraphrasing, and reflection to establish a trusting relationship. For instance, the researcher used phrases like: "sounds like you are frustrated with your students' low motivation." This was done so the participants would express their opinion on these specific issues and more. For example, teacher (2) indicated a lack of professional development on single-gender education. The researcher in turn provided her with relevant articles and book titles for her professional growth.

Lens of People external to the study: The researcher was aware of the potential bias that might added to the research data; thus, the researcher asked the panel experts (dissertation chair and committee) to examine the data with a critical perspective and to provide feedback so the researcher could reexamine and eradicate any possible bias. The researcher also asked peers within the school district that were currently working in a single-gender setting to give me feedback.

CHAPTER IV

FINDINGS

The present study examined data gathered from a high poverty Title I federally assisted school with respect to implementing single-gender classrooms. This chapter was organized by first presenting the perspective from teachers, students, and parents with the initial year of implementing single-gender classrooms. Second, the researcher analyzed and summarized school level data with respect to student behaviors during the initial year of implementation, (e.g., discipline incidents and student attendance data).

Teacher Perspectives

Prior Experiences and Training

About half of the teachers never experienced teaching in a single-gender environment. For example, one teacher commented, "I never encountered teaching in a single-gender environment." Similarly, another teacher noted, "This is my first year to encounter a single-gender classroom. On the other hand, some teachers acknowledged that they had some experience as students (e.g., "I have not taught in a single-gender setting, but I attended Jr. High with single-gender classes." "In my school years we had single-gender classes in middle school.").

With regard to training or preparation for teaching in a single-gender environment, three quarters of the teachers indicated that they did not receive any training

or preparation prior to implementation. For example, one teacher stated, "I had no idea what to do." Another teacher commented, "No prior training was provided but I tried to keep gender in mind when preparing lessons."

As a result, these teachers took it upon themselves and contacted acquaintances for advice and tried to develop a classroom environment that they thought would be appropriate. For example, one teacher mentioned, "When designing lesson plans I tried to meet the needs of all my students, for example, when teaching bar graphs I picked a topic that my students could relate to based on their gender." Another teacher stated:

> I was not able to change my room to make it more feminine or masculine since I would have both sexes through out the day, but I used different illustrations and tried to relate to the students in different ways.

Teaching Structure and Practice

With regard to perceived differences in teaching structure the year with single-gender classes as compared to the previous year when there were mixed-gender classes, almost half of the teachers believed that their teaching structure was changed for the single-gender classes. For these teachers, the goal was to get boys and girls involved and excited about being in the classroom. Easily accessible manipulatives, books geared for boys and others geared for girls. Having high interest, current non-fiction books visible in the classroom are a key. For example, a fifth-grade teacher with 2 years of experience commented, "I had to find challenging work for the girls to complete. They were fast learners and completed class work quickly." A third-grade teacher with 19 years of experience stated, "Girls were more task oriented and organized."

In general, these teachers found that having open space that allowed for physical movement works best for boys. Also allowing flexible and changeable seating arrangements is another option that worked best for boys need for space and movement (e.g., "The boys required movement and breaks during instruction. At times it was difficult to hold and keep their attention" and "Boys enjoyed completing tasks that involved using their hands.").

Methods of Discipline and Classroom Management

The teachers in the present study used three methods for discipline and classroom management, including assertive discipline methods, notification of parents, and detention. All 18 of the teachers utilized assertive discipline methods. Assertive discipline is a structured, systematic approach designed to assist educators in running an organized, teacher-in-charge classroom environment. They were supported by clearly stated classroom rules that have been explained, practiced, and enforced consistently. Students who complied are reinforced and rewarded, whereas those who disobeyed rules and directions received negative consequences. In addition, all 18 teachers notified parents of student problems. Fourteen of the eighteen teachers used detention as a method of discipline.

The benefits of utilizing these methods for discipline and classroom management can be grouped into three categories. First, half of the teachers found the color warning system as an effective method of curtailing discipline within their classroom. For example, a third-grade teacher in her 11th year of teaching stated, "An assertive discipline plan such as the color system with specific classroom rules and expectations worked great with my class." Similarly, one teacher commented:

I used the green, yellow, blue, and red warning system, each having various consequences. Green (great day), yellow (uh-oh, caution), blue (phone call to the parent), and red (office referral and/or corporal punishment). The specific color that the child earned was placed in the take home planner each afternoon before dismissal. I also used this color warning system with mixed-gender classrooms.

Second, some teachers notified parents by sending home notes and calling parents when any type of discipline issues arose. A fifth-grade teacher, who was in her fourth year of teaching stated:

I gave the boys a warning and if the behavior happened again they were punished. Tell them what is expected and if it is not followed consequences would follow. You had to allow the boys more room to move around and get their rowdiness out in order to get to the core of learning. Boys were harder to handle especially if something out of the ordinary happened. Boys also had problems keeping their hands to themselves, which I found very interesting.

Third, a team of fifth-grade teachers found detention as a form of discipline particularly effective for boys in their classrooms. For example, one of the teachers remarked:

We used recess detention and after school detention mostly. I did not do my discipline any different than before. I found that the most devastating thing for boys was to lose their P.E. time. Most of the girls did not care if they missed P.E. Thus, recess detention was less effective for girls.

Likewise, another team of fifth-grade teachers commented:

> Boys seemed to hate having recess or activity taken away from them. If they thought they would have no recess, they started working. I used the same classroom management for single-gender and mixed-gender. Of course you had to edit some to fit each class.

Classroom Engagement

The teachers stated that single-gender classrooms had a positive impact on student engagement, which can be grouped into four categories. First, many teachers found that single-gender classes provided a positive learning environment for their students. For example, one teacher noted, "All of the boys were more likely to participate and were unafraid of female opinions." Likewise another teacher commented, "It was mostly positive. The students felt very comfortable asking questions when they did not understand. They did not seem to be intimidated by their classmates."

Second, the single-gender classrooms provided opportunities, which allowed students to be more productive. The majority of the teachers considered this year as the most productive school year. A fourth-grade teacher in her 23rd year of teaching noted, "It was great. Center time ran smoothly and without much instruction, which allowed me the time to pull struggling students for one on one remediation." Similarly, another teacher commented, "We were extremely productive with research and math. The boys loved to research information either in books or on the computer and then typed their findings." Other teachers agreed, "I saw the best Lucy Calkins writing samples this year compared to last year among my fourth grade girls" and "This was the first year in my career where I was able to form a book club with my students."

The third benefit of single-gender classrooms was that it provided teachers with opportunities to learn from their students and thus became more responsive to their needs. A fifth-grade teacher in her eighth year of teaching stated:

> It was very interesting to see the differences in all-boy classes and all-girl classes. The all-boy classes tended to like the subjects that I taught much better than the girls did. The boys also understood the subjects better than the girls.

The implementation of single-gender classes even prompted one third-grade first-year teacher to research the brain development of females and males. She learned that the root causes of gender differences in learning and development between boys and girls could be categorized into four areas: (a) differences in the male and female brain, (b) maturity, socialization and culture, (c) educational bias, or (d) a combination of the above three categories. A girl's corpus callosum is larger than a boys', this enables more cross talk between hemispheres in the female brain. Girls in general have better listening skills and distinguishing among various tones of voice. This leads to greater use of detail in writing assignments. The hippocampus is larger in girls than in boys, increasing girls' learning advantage in language arts. Girls use more cortical areas of the brain for verbal and emotive functioning. Girls also tend to multitask better than boys do and have a greater ability to make quick transitions between lessons (A Report by the District 39 Community Review Committee, 2006).

This third-grade first year teacher further shared with me that most boys experienced words and feelings differently than girls. The cortical trend toward spatial mechanical functioning makes many boys want to move objects through space, like balls, model airplanes, or just their arms and legs. The more words a teacher used, the more

likely boys were to zone out or go into a rest state. The male brain was better suited for symbols, abstractions, diagrams, pictures, and objects moving through space than for the monotony of words. Boys were also able to recall facts, rules, and categorize. Their right brain strengths encompassed visual spatial and visual motor skills, which enabled boys to excel in topics like geography, science, and math. The average boy was not as mature socially, less verbal, and more active than the average girl. Boys started slower in reading and writing (Gurian & Stevens, 2004).

As a result of this third-grade teacher sharing this information with myself and the other teachers involved it quickly became apparent that the students at Richland Elementary School compared closely to other students within the United States. Correlations could be drawn as to what the brain differences indicated and how this truly displayed among the students who participated in this study. Some teachers made specific observations for boys. For example, one teacher noted "The boys really got into math, science, and social studies. The skills needed for these subjects came easy to boys. They got it the first time you explained it to them." Another teacher commented, "I had to work extra hard and force the boys to read and do language arts."

Others made specific observations for girls. For example, a fourth-grade teacher stated, "The girls in my class were constantly reading books while at school and at home. They always came in ready to take AR (accelerated reader) tests. Likewise, another teacher remarked, "The girls in my class were eager to work on language arts skills such as working with words, grammar, punctuation, and vocabulary." A third, fourth and fifth-grade teacher mentioned, "The majority of girls in my class disliked math. It took them longer to learn their multiplication facts and they just did not get many of the math

concepts." Similarly, another teacher noted, "I had to offer after school math tutoring to several female students in my grade this year and in previous years of teaching."

Fourth, many teachers found that single-gender classes had a more positive impact on girls as compared with boys. A second year fourth-grade teacher commented, "The girls this year seem to be more comfortable responding to questions and sharing their opinion." Another veteran teacher remarked, "The boys had no desire to learn so it made it really hard to get them excited about school." Likewise, another teacher with more than three years of teaching experience stated, "I found at this age, the boys moan and groan about having to do work. They sighed loudly and openly complained about every little thing."

Challenges Encountered within Single-Gender Classrooms

The teachers found that the implementation of single-gender classes encountered a number of challenges. First, some teachers were overwhelmed with behavioral issues, particularly with the boy classes. For example, a fifth-grade teacher with two years of experience noted:

> The boys tried to out do each other and they feed off of each other. Also, it was very hard to keep them on task. They had very short attention spans and are at the age of thinking they are too cool to do work while at school.

Likewise, a fourth-grade teacher with five years of experience commented:

> I feel as though my boys definitely feed off of each other in terms of behavioral issues. They seem to get out of control more often when they are around twenty other children of the same gender, which has had a negative effect on them academically.

Second, the teachers were concerned with the attitudes of some students from time to time. A fifth-grade teacher commented, "One of my girl classes was usually always somewhat negative due to the back biting and rudeness that they possessed. It was a year of constant drama and cat fights." The single-gender class prompted another fifth-grade teacher to say, "Sometimes the girls were very supportive and other times they were at each other's throat." Another teacher observed that "At times it could be relaxed and calm among the boys, while at other times it could seem very stressful and crowded" and "High stress level and too competitive among the boys."

Third, a few of the teachers encountered additional challenges with the all-girl classes. A fifth-grade teacher with 14 years of experience stated, "It was a little difficult to handle the catty girl fights some days. There were a lot of hurt feelings everyday." Similarly, a fourth-grade teacher with 6 years of experience commented, "The girls did not seem to be as attentive when it is all-girls in the room versus when there are boys in the room." Other teachers agreed. For example, one teacher observed:

> Girls tended to try to please teachers but they are drama queens. The girls are chattier and are constantly at war over the smallest he said, she said things. In addition, girls irritated each other and argued over who were friends with whom. Very talkative, lots of drama between the several groups of girls. I would've liked to have been able to rearrange my room to help control the talking.

A final challenge of having classes grouped by gender according to a first year third-grade teacher was, "No matter what you do there were problems with single-gender classes. It was too tempting to talk and play or fight with a friend that is sitting right next to you." Another third-grade teacher in her second year of teaching stated "I had much

success with groups in the past but this year was not as successful with the boys. They either do not get along or play entirely too much and accomplish nothing."

Teacher Interests

When asked if teachers had the choice to teach in a single-gender class again, about one quarter of the teachers indicated that they would choose this setting. One third-grade teacher with 4 years of experience commented, "This was my best teaching year. It was a good year! I loved single-gender classes. I felt the students were benefitting greatly academically and socially." Another third-grade teacher with eleven years of experience noted, "This year I had a better relationship with my students. I tailored my instruction, which helped cut down on gender driven distractions."

On the other hand, about half of the teachers indicated that they would not choose a single-gender class again. A fifth-grade teacher with 7 years of experience commented, "I prayed to God that we don't do this next year." Another fifth-grade teacher with 8 years of experience remarked, "This was not very effective for me this year." Similarly, another fifth-grade teacher with 14 years of experience stated, "I felt the single-gender classes did not work for my class. I had several problems with discipline and I felt that if more time was put into selecting the classes it would have worked out better." A team-teacher from the sixth-grade replied, "I felt that that I had lost the balance that males and females contributed to each other in an educational setting. I had always enjoyed watching them learn from each other's strengths and weaknesses."

Student Perspectives

Students' Work Habits in a Single-Gender Setting Versus a Mixed-Gender Setting

Students were asked to give their thoughts about their work habits (e.g., class participation and homework participation) during the initial year of single-gender implementation. About half of the students (47%) indicated that their work habits had improved. For example, one student commented, "I did better than last year. I turned in my homework on time. I did my work like I was suppose to do." Similarly, another student remarked, "I was paying more attention in class and completed more work with encouragement from my teacher."

One possible explanation for this positive change was that the implementation of single-gender classes removed the largest distraction for students, the opposite sex. The separation helps girls hold interest in classes involving math, science, and technology by bolstering their confidence. For example, one girl commented, "You did not have to worry about males interrupting during an important lesson." Likewise, another girl stated, "If you got an answer wrong it was okay and you could be free to answer without being embarrassed by boys."

In particular, girls found that the single-gender classes made it easier to concentrate while in class. For example, a fourth-grade girl commented, "It was better now because it was easier to concentrate. Boys made it hard to pay attention." Similarly, another fifth-grade student remarked "It was a lot easier because in an all-girls class the girls would help you and the boys use to just say no."

Meanwhile, 27% of the students indicated that their work habits remained the same. A fourth-grade student stated, "I felt that my work habits and homework habits

stayed the same. I was always good at keeping up with that kind of stuff." Likewise, a fifth-grade male student remarked, "I'm did the same like last year in the mixed-class but sometimes I wished I was in a mixed-class."

On the other hand, 26% of the students indicated that their work habits had declined. Typical responses include, "I slacked on my homework this year compared to last year" and "Last year I felt I did better in mixed-classes." Some student attributed this decline to the combination of the following explanations: "I did not work well with all-boy classes because the boys were talking;" It was horrible being in an all-girl class. We had fights all the time and that's why I could not get my work done;" and "Male students fought a lot when there are no females around."

School Subjects

This section presents the findings relating to the students responses to the survey questions. There were 287 students who provided usable answers for this study. Males outnumbered the females in this study. There were 56.1% of them who were male and 43.9% of them who were female. It appeared that gender played a role in what subject children identified as their favorite. For instance, math and science ranked high as a favorite for boys. Art, reading, language arts, writing/English were among the favorite subjects for girls. In addition, age also seemed to be a factor in children's attitudes toward school subjects.

Males, not females, may actually be at a disadvantage in the gender gap. There were gender differences that disadvantage boys in reading, as there were disadvantages for girls in science. Improving the achievement of males while not neglecting the needs of females was one of the biggest challenges facing teachers and parents. The data

revealed that the students who participated in this study favored and disliked the same subjects as other students with the same gender and economic make up. Prior to the single-gender class implementation twenty-eight percent of females said that math was their favorite subject. After the single-gender class implementation thirty percent of females said math was their favorite subject. The results did show a slight change in female opinions about math.

There was an increase in the number of female students who identified math as their favorite subject during the implementation year. It was noted this increase in math was the result of not having boys in the classroom. For instance, one girl stated, "It was easier to concentrate without the boys around to distract us." Another girl commented, "I was more comfortable without the boys present and my grades started improving in math." It would stand to reason that if a girl's confidence level improved in math, her achievement in math would improve.

Many male students selected science because they felt that it teaches about animals and the world and they had an opportunity to do experiments. With science, they learned about nature, animals, and plants. For example, several students commented, "I liked science because we did experiments and we got to look stuff up on the Internet. We also got to participate in the annual Science Fair." Another student noted, "I liked science because it is the only subject that's fun and we got to learn about Benjamin Franklin and other things." Likewise, another student mentioned, "I like animals such as Giraffes and plants like the Venus Flytrap." "I liked science because it would let you be fun and creative. Also because you got to invent things."

Female Students Perception of Single-Gender Classes

Female students described their perception(s) of the initial year of single-gender implementation. Thirty-six percent of the female students noted that they had a positive perception of single-gender classes. The first benefit of single-gender classes for females was being able to answer questions in class without worrying about how they looked (e.g., "I liked being in an all-girl class because you could really express yourself."). A fifth-grade female student explained:

> There were no boys to get you in trouble. It was a lot better without boys trying to tell you what to do and you can talk about girl stuff without boys around to tell you what to do or scream and yell at you.

Similarly, another girl stated, "When you're in a girl and boy class, the boys just act silly and goofy. I did not have to feel this way this year because it was all-girl classes and all-boy classes."

In addition, the boy free environment encouraged them to focus on their studies and to form very close friendships. A fourth-grade girl noted, "I'm was in an all-girl class and I thought it was better because you did not have boys bothering you and saying you liked this person and stuff." Similarly, a fifth-grade girl commented, "I liked being in an all girl class because we didn't have boys in our class to harass us. One more thing I liked about being in an all-girl class was that there were no boys to hurt us girls."

On the other hand, about one-third of the girls had reservations about single-gender classes. The first concern of a female single-gender class according to a fifth-grade student, "A lot of girls always got in fights and argued. They never stopped bickering during class." Second, another fifth-grade student stated, "When it was just

girls we were more talkative because we are girls." The third disadvantage of a female single-gender class according to yet another fifth-grade student was, "I hated it because it was too much drama." Likewise, another fifth-grade student noted, "It was horrible being in an all-girl class. We had fights all the time. That is why I wanted to be in a mixed-class."

Male Students Perception of Single-Gender Classes

Male students were asked to describe their perception(s) of the initial year of single-gender implementation. Boys have a higher physical activity level and develop self-control later than girls. This means that there are probably more boys who are often active more often in the classroom (Chadwell, 2012). One third of the male students noted that they had a positive perception of single-gender classes. The first benefit of single-gender classes for males was being able to be rough with each other or not having the girls around them (e.g., "Boys got a chance to be rowdy and we did not have to be around the bossy girls."). A third-grade male student explained:

> I really liked it because you were not around girls all the time. Plus you didn't have to deal with the fact that some one liked you. It was more fun with all-boys in a classroom. I didn't want to be in a class with girls.

Similarly, another male stated, "I concentrated more on my work than with girls around. I also liked all-male classes better because boys were friendlier than girls.

On the other hand, 38% of the males had reservations about single-gender classes. The first concern of a male single-gender class according to a fifth-grade boy, "I did not like being in an all-boy class because boys need girls." Second, another fifth-grade boy stated, "Male students fought a lot when there were no females around." The third

disadvantage of a male single-gender class according to yet another fifth-grade boy was, "Since there were no girls in our class the boys acted much worse than when we had the girls in our class." Another fifth-grade boy noted, "The other guys had been fooling around way more than last year since the girls left." Lastly, an additional fifth-grade boy commented, "Boys acted better with girls. You could not talk to your girlfriend. You could not see your best friend. Please change it back to mixed-classes."

Educators should realize that many areas in which we see boys struggling are connected to larger educational and social problems and are not just a function of gender. Fortunately, we know more about these larger problems and some of the steps we can take to address them than we do about gender gaps (King & Gurian, 2006). Low-income, black, and Hispanic boys, in the aggregate, are not doing well. Focusing on closing these racial and economic achievement gaps would do more to help poor, black, and Hispanic boys than closing gender gaps (Mead, 2006).

Parent Perspectives

Parents were given the opportunity to share their impression of the school year during the initial year of single-gender implementation. There were a variety of responses, ranging from support for the single-gender environment to dissatisfaction at the new environment. The majority of the parents indicated that they had not experienced any difficulties with the all-gender classes. Some of them loved the same gender classes. Others expressed the feeling that this had been one of the worst school years they had ever had to face with their child at a school.

Advantages of Single-Gender Classes

One group of parents found that the separation allowed for tailored instruction and cut down on gender driven distractions among boys and girls such as flirting. One parent stated:

> I was very pleased with RUES this year. I felt that my child has had a positive experience being in a same gender classroom. She had even expressed to me how she enjoyed being in a classroom with all-girls. She did not feel any peer pressure or harassment from the boys. She felt more relaxed and her grades had improved.

Likewise, another parent who had a child in the fourth-grade commented, "I was pleased with the progress my son has made to this point. He was picking up the material well and seemed to enjoy being in class with all boys." Similarly, another parent who had a child in the third-grade noted, "I was impressed with the school year thus far because my daughter was able to concentrate better on her studies with other girls in her classroom."

These parents observed that students learned the same curriculum but the differences in their learning environments were very apparent (e.g., from the blue painted walls in the classroom to the red paper hearts that decorate the walls in the girls classroom). For example, one parent who had a female child in the fourth-grade remarked, "My child had a positive experience being in a same gender classroom environment, particularly with the absence of peer pressure or harassment from the opposite sex." Another parent elaborated:

> The more relaxed atmosphere of the single-gender classroom environment resulted in improved grades for my child, especially since the teachers made

themselves available to provide help for the students in need. I had no problems with the separation of the classes and my daughter seemed to be very happy.

Parents also saw an increase in their child's self-confidence, independence and self-efficacy. Single-gender education enhanced student success when teachers used techniques geared toward the gender of their students. Other parents commented:

> I thought the single-gender classes' worked well. They had a lot of the same interests and could relate to each other well. The teacher could focus more on similar personalities of single-gender classes. I definitely thought that there were fewer distractions in single-gender classes. I thought the single-gender class helped my daughter's grades and confidence. She enjoyed going to school! I think it was important for the children to be focused on their schoolwork rather than the drama with disciplining a mixed classroom.

Disadvantages of Single-Gender Classes

Other parents expressed their reservations about single-gender classes. For those parents, a good education should allow different kids to learn from each other, together, to solve common real-life problems. Thus, separation by gender was likely to promote harmful gender stereotypes and deprive kids of equal educational opportunities. For example, one parent who had a child in the third-grade commented, "The main concern was why the separation. I thought he was confused, but accepted the situation. When we teach equality, I think this created some gray areas or uncertainty related to everyone being treated equally."

Specifically, some parents were not in tune with the varied changes that had taken place in math, science, and learning development since they were in school. For

example, one parent commented, “I should have been notified of the change and even asked how I felt about it before putting my child in a same-gender class setting.” A parent who had a daughter in the fifth-grade student stated, “My child felt more comfortable with her guy friends because they go to venture together and she did not understand the drama.”

Similarly, another parent who had a daughter in the fifth-grade lamented “My child would benefit from mixed-gender classes because the girls were mean. This was one of the worst school years I had ever had to face with my child.” The parent of a fourth-grade male student noted, “My child was not getting enough socialism with girls. There was no diversity in the classroom, which made my daughter more curious about the differences between girls and boys.” An additional parent stated:

> The groups or clicks had been an issue and girls do nothing but argue, fight, and call each other names. An all-girl class was the worst idea because there were a lot of petty problems that I did not expect to encounter yet.

Surprisingly, there were parents that remained neutral. For example, one parent commented, “None really as a parent. I’m sure it was more of a challenge for the teachers.” Similarly, another parent stated, “Our sons grades were good and about the same as in his previous grades.” Likewise, another parent remarked, “We did not have any difficulties. It worked well.” Other parents noted:

> Everything was fine so far. We had no problems to mention. I have not had any problems yet. My daughter always does extremely well. Overall the year went fairly well.

Single-Gender vs. Mixed-Gender

Parents were asked to give their views of single-gender classrooms versus mixed-gender classrooms. Almost half of the parents believed that the single-gender classroom offered a better education for their children. For example, one parent commented, "The bully free environment has given my daughter the ability to focus on school work." Similarly, another parent stated, "Not having to worry about impressing the boys has helped my daughter concentrate more in class." Likewise, another parent remarked, "My son was given the freedom to be more active during instructional time."

Parents were asked to give their views regarding if they had a choice, if they would choose a single-gender class again. Their responses are summarized as 60% of the parents believed that they might choose a single-gender class again if given the choice. Single-gender classes invigorated teachers, engaged students and involved parents. Successful implementation of single-gender classes came from a partnership among the school and the parents. For example, one parent stated, "Yes because it seemed like the classroom was more focused." Similarly, another parent stated, "The children were more focused on their work since there were no females in his class." Another parent remarked, "The children seemed more attentive."

More parents are choosing this option because they see the value and they believe this approach helped their child perform at a higher level. Of those parents, 20% of them said that it was possible that they would choose a single-gender class again. Students in single-gender classrooms will one day live and work side-by-side with members of the opposite sex. As a result, 20% of the parents indicated that they would not select a single-gender class if given a choice. Educating students in single-gender classrooms

limits their opportunity to work cooperatively and co-exist with members of the opposite sex.

One possible explanation for those parents that would not choose a single-gender class again was that they did not see its benefit (e.g., "I guess because I had really not seen a difference in my child" and "My child would not be in another same gender classroom again. I did not see this as a benefit at all. I saw that it caused more problems."). One parent explained:

> When you throw them into a situation they have never been put in, it causes nothing but grief for the children and for the parents. They need to interact with the opposite sex. Children should learn to work and cooperate with the opposite sex. They need to learn how to deal with each other.

Of the parents, 6.7% of them believed that the single-gender classroom did not make any difference. For example, one parent commented, "In my household education was the only priority. Therefore my child did well regardless." Likewise, another parent stated, "My children came from a home where both parents have college degrees and work full-time in the areas in which we studied."

Analysis of School Level Data

Formal discipline referrals were typically made only when a teacher felt reinforcement from an administrator on a particular issue was beneficial. By the end of the initial year of single-gender classroom implementation there were a total of 44 such incidents that were referred to the Principal and/or Assistant Principal. An analysis of third-grade, fourth-grade, and fifth-grade discipline referrals for the school year is

reflected in Table 1. The initial year of single-gender implementation had the lowest number of discipline referrals.

Table 1

Discipline Incidents by Grade

Grade level	Discipline type	School year	Male	Female
Third Grade	Suspension	2008-2009	6	2
		2007-2008	9	1
	Corporal punishment	2008-2009	0	0
		2007-2008	0	0
	Alternative school	2008-2009	0	0
		2007-2008	1	0
Fourth Grade	Suspension	2008-2009	11	0
		2007-2008	12	3
	Corporal punishment	2008-2009	0	0
		2007-2008	0	0
	Alternative school	2008-2009	1	0
		2007-2008	2	1
Fifth Grade	Suspension	2008-2009	15	2
		2007-2008	15	5
	Corporal punishment	2008-2009	0	0
		2007-2008	4	0
	Alternative school	2008-2009	3	0
		2007-2008	6	0
	Fire arm possession	2008-2009	1	0
		2007-2008	0	0

During the initial year of implementation, the third grade male students had a year-end total of six suspensions and the female students had a year-end total of two suspensions. During the 2007-2008 school year, the third grade male students had a year-

end total of nine suspensions and the female students had a year-end total of one suspension. Corporal punishment was not administered to any third grade students during the 2008-2009 school year or the 2007-2008 school year. No male or female students were referred to the alternative school during the 2008-2009 school year. However, one male student was referred to the alternative school during the 2007-2008 school year.

In fourth grade during the initial year of implementation, there were 11 year-end total of suspensions among the male students and 0 year-end total suspensions among the female students. During the 2007-2008 school year, there were 12 year-end total of suspensions among the male students and 3 year-end total suspensions among the female students. Corporal punishment was not administered to any fourth grade during the 2008-2009 school year or the 2007-2008 school year. One male student was referred to the alternative school during the 2008-2009 school year. No female students were referred to the alternative school during the 2007-2008 school year. Two male students were referred to the alternative school during the 2007-2008 school year. One female student was referred to the alternative school during the 2007-2008 school year.

In fifth grade during the initial year of implementation, there were 15 year-end total of suspensions among the male students and two year-end total suspensions among the female students. During the 2007-2008 school year, there were 20 year-end total suspensions among the male students and 5 year-end total suspensions among female students. Corporal punishment was not administered to any males or females during the 2008-2009 school year. In 2007-2008, four male students received corporal punishment.

Three male students were referred to the alternative school during the 2008-2009 school year and no female students were referred to the alternative school during the 2007-2008 school year. In school year 2007-2008, six male students were referred to the alternative school and no females were referred. Only one male student was expelled from school during the 2008-2009 for possession of a firearm. No students were expelled from school during the 2007-2008 school year for possession of a firearm. Before and after the implementation of single-gender classes, the total number of suspensions for males was 36 and 32 respectively. The corresponding total number for female suspensions was nine and four respectively. As a result, it seemed that the single-gender classes may have had more of an impact on suspensions for females than for males.

Before and after the implementation of single-gender classes, the total number of corporal punishment incidents for males was four and zero respectively. The corresponding total number of corporal punishment incidents for females was zero and zero respectively. As a result, it seemed that the single-gender classes had more of an impact on the reduction of corporal punishment for males. Female students were not administered corporal punishment during the initial year of implementation or during the previous school year.

The total number of alternative school referrals for males before and after the implementation of single-gender classes was nine and four respectively. The corresponding total number of alternative school referrals for females was one and zero respectively. As a result, the single-gender classes had the greatest impact on the reduction of alternative school referrals for males. However, the data indicated that during the initial year of implementing single-gender classes, one male student was

expelled due to the possession of a firearm while on school grounds. Based on the results, the initial year of single-gender implementation had the lowest number of discipline referrals in suspensions, corporal punishment, and alternative school referrals.

The problem of poor school attendance has vexed American educators for many years. Teachers are always expressing concern for school attendance. A major cause for concern over student absenteeism is the harmful effect this problem may have on those who attend regularly. Regular attendance can be a determiner of success in school. Attendance can impact a student's grades and affect the growth and development of productive work habits. Excessive student absenteeism interrupts teacher directed activities by requiring the teacher to bring some students up-to-date while assisting other students who had not been absent with the daily scheduled lesson.

Table 2

Average Daily Attendance (End of the Year)

Grade	2006-2007	2008-2009
3rd grade	96.8%	96.7%
4th grade	95.7%	95.8%
5th grade	94.2%	94.7%

Attendance records for the initial year of implementation and the previous year were examined. Results showed the student participants had an average daily attendance (ADA) of 96.8% in third-grade coed classes and 96.7% in third-grade single-gender classes. The average daily attendance in fourth-grade coed classes was 95.8% and 95.7% in fourth-grade single-gender. The average daily attendance in fifth-grade coed classes

was 94.7% and 94.2% in fifth-grade single-gender classes. Based on these findings, participation in a single-gender class had no significant impact on student attendance.

The study revealed that among third grade students during the initial year of implementing single-gender classrooms, there was a very minimal drop in attendance during the 2008-2009 school year. Among the fourth grade students there was a minimal increase in attendance during the initial year of single-gender classroom implementation. During the 2008-2009 school year, the fifth grade students also showed a minimal increase in average daily attendance.

Summary of Results

The present study examined data from a high poverty Title I federally assisted upper elementary school with respect to implementing single-gender classrooms. Data was collected from teachers, students, and parents regarding their perspectives with the initial year of implementing single-gender classrooms and their level of interest in having single-gender classrooms as an option at an upper elementary school. Second, relevant school level data was analyzed and summarized with respect to student behaviors during the initial year of implementation, (e.g., discipline incidents and student attendance data).

Teacher, student, and parent perspectives about the implementation year of single-gender classes are presented under three categories: (a) teacher perspectives of the school year with single-gender classes, (b) student perspectives of the school year with single-gender classes, and (c) parent perspectives of the school year with single-gender classes. Within the context of this study, it was hoped that a determination could be gleaned as to which setting provides the least number of disciplinary referrals, increase in school attendance and improved classroom conduct.

An open-ended survey was used as the instrument to collect data to address the research questions. This approach was utilized to examine perspectives of single-gender classroom on the participants of the study. The study was confined to the 2008-2009 school year. The focus was on the everyday experiences and events of the participants and the perceptions and meaning they attach to those experiences.

The data revealed that teachers and parents considered single-gender classrooms provided a positive learning environment for students. Such as classroom participation among the boys, students feeling comfortable enough to ask questions when they did not understand something, allowed teachers to tailor their instruction which cut down on gender distractions within the classroom, and students were not pressured or harassed by the opposite sex. Teachers, students, and parents emphasized that single-gender classrooms allowed students to be more productive and removed the largest distractions for male and female students, which allowed them to concentrate on their schoolwork.

In addition, teachers, students, and parents agreed that work habits had improved during the initial year of implementation. According to teachers, single-gender classrooms helped them better learn their students and become more receptive to their needs. For example on teacher commented, "The students seem more focused this year compared to last year and productivity is increasing." A parent stated, "I have been impressed this year because my daughter has been able to concentrate better on her studies with calmer other girls in her classroom." A male student remarked, "I am doing a lot better this year because I am able to concentrate in class and pay more attention to my teacher."

The data also revealed that single-gender classrooms had a positive impact on girls as viewed by teachers, female students, and parents of female students. These positive impacts were the result of the females feeling comfortable enough to ask questions when they did not understand something, made it easier to concentrate in class, removed the largest distraction of having the opposite sex in class.

The data from this study revealed a few disadvantages between the viewpoints of teachers, students, and parents. The challenges among the boys and girls related to classroom behavior. First, many teachers in the all-girl classes had to rearrange the seating arrangements of the students to control excessive talking, catty girl fights, and contend with the drama of the girls. Second, teachers had to vie with aggressive behavior, rivalry, and competitiveness of the boys. In addition, boys have a shorter attention span and it's harder to keep them on task.

Procedures for identifying and following up absentees were important. School personnel must be aware of the influences that determine attitudes of students toward school. The school was a key determinant of the nature of the children who leave it. The rise of youth culture in public schools marks the emergence of attendance problems and the increased evidence of a spread of truancy and delinquency.

During the initial year of single-gender class implementation, there was a very minimal drop in attendance during the 2008-2009 school year. Among the fourth grade students there was a minimal increase in attendance during the initial year of implementation. During the 2008-2009 school year, the fifth grade students also showed a minimal increase in average daily attendance.

The data revealed that the single-gender classes had more of an impact on suspensions for females than for males. Males showed a minimal decrease in suspensions, whereas, females showed a significant decrease in suspensions. The single-gender classes had more of an impact on the reduction of corporal punishment for males. Female students were not administered corporal punishment during the initial year of implementation or during the previous school year. Based on the results, the initial year of single-gender implementation had the lowest number of discipline referrals in suspensions, corporal punishment, and alternative school referrals.

Prior to implementing single-gender education, it may be beneficial for decision makers to gather research from those who are considered experts due to their experiences. Their expertise will assist school leaders in making the decision to implement or reject the idea of single-gender education. Furthermore, the literature indicated that teachers' perceptions had an impact on the overall successfulness of school reforms. However, teachers are rarely asked by school district officials to share their perceptions, opinions, and insights regarding the implementation of such reforms (Derry & Phillips, 2004).

Communicating with parents so they understand the reasoning behind implementing single-gender classes was imperative. Nurtured over time, single-gender implementation could be a strong step toward offering a broader range of instructional choices that engaged parents and students while meeting the individual needs and interest of every child.

CHAPTER V

DISCUSSIONS AND CONCLUSIONS

In the previous chapter, the results of this study were presented in three sections. The first results presented the perspective from teachers, students, and parents with the initial year of implementing single-gender classrooms. Second, the researcher analyzed and summarized school level data with respect to student behaviors during the initial year of implementation.

The results from this study revealed that teachers and parents considered single-gender classrooms providing a positive learning environment for students. Teachers, students, and parents emphasized that single-gender classrooms allowed students to be more productive, removed the largest distractions for male and female students, and allowed them to concentrate on their schoolwork. In addition, the data revealed that single-gender classrooms had a positive impact on girls as viewed by teachers, female students, and parents of female students in terms of feeling comfortable enough to ask questions when they did not understand something. However, one-third of the girls had mixed views about single-gender classes.

Opportunities for girls to engage in mathematic learning were described as a positive aspect of the single-gender classroom environment. In addition, girls were given opportunities to develop leadership through taking initiative in a subject area that has been historically male dominated. In terms of the unique needs of boys and girls in the classroom, teachers that completed the survey, felt that the single-gender classroom

environment served as a structured, focused, and consistent environment for males. The boys were specifically mentioned as needing a more structured learning environment than all other groups because of their behavior. It was apparent that some teachers at the school differentiated their approaches to instructional delivery based upon approaches that have been successful for the girls or boys during classroom activities.

As a result of the implementation of single-gender classes, some teachers recognized different learning styles and began to address those needs. The separate learning spaces developed for boys and girls provided a unique opportunity and framework for teachers to differentiate instruction. Teachers in the single-gender environment observed that boys need a more structured and focused learning environment. These teachers saw single-gender classrooms as a benefit for boys who are more likely than the girls to struggle academically. The ability to structure classrooms for struggling males while not subjecting girls to such a structured program helped to enhance learner outcomes for both groups of students.

After the implementation of single-gender classes, teachers at the school understood the challenges that existed among girls and boys in a Title I school. In addition, they understood how these challenges were unique and different from one another based upon gender. As a result of the single-gender classes, girls were more comfortable with leadership development in the areas of math, self-esteem and self-concepts. Meanwhile, boys gained more ground academically, especially with literacy, and behaviorally, which the teachers believed requires a more focused, disciplined, and structured learning environment.

On the other hand, the data revealed a few disadvantages from the viewpoints of teachers, students, and parents in the area of classroom behavior and/or conduct. Many teachers in the all-girl classes had to rearrange the seating arrangement to control excessive talking. In addition, in the all-girl classes there were catty fights and continuous drama. In the all-male classes teachers contend with aggressive behaviors, competitiveness and rivalry. Also, it was noted that boys have a much shorter attention span, which makes it harder to keep them on task.

Single-gender classes had more of an impact on suspensions for females than for males. Females showed a significant decrease in suspensions. There was also a reduction of corporal punishment among males during the initial year of implementation. On the other hand, during the initial year of single-gender class implementation, there was a very minimal drop in attendance. Males showed a minimal decrease in suspensions.

Over the past 30 years, a debate about the effectiveness of single-gender schools has raged within academic circles. In their study of single-gender schools, researchers (Lee & Bryk, 1986) found that single-gender schools improved student performance and reduced gender stereotypes. More recently, Sax (2009) argues that single-gender schools can promote an environment more conducive to learning than coed schools and specifically help girls' test scores, confidence, and scholastic engagement.

Unlike previous studies, which focused primarily private or parochial schools, middle schools and/or high schools, this study focused solely on an economically disadvantaged school within an upper elementary setting with a significant representation of ELL students. In addition, there has been no previous research that has examined the

perspectives of teachers, students, and parents. As research continues to show an ever-increasing achievement gap between students in poverty and those who are not (Davis, 2003), many educators seek alternative and unique ways to educate students in economically disadvantaged schools who continue to struggle academically and socially. While single-gender classrooms are by no means a cure all for the adversity faced by females and poor and minority students in public schools, an analysis of the aforementioned research data indicated salient benefits for such students in that they can provide a learning environment where affective and cognitive learning outcomes could be realized.

Single-gender schooling as an educational reform initiative has been given serious consideration amongst many researchers in the educational arena (AAUW, 1992; 1998). These considerations are due in large part to the documented positive outcomes that have been noted in many single-gender schools and classrooms throughout the country, which serve the economically disadvantaged (Herr & Arms, 2004).

The present study extends previous research on single-gender education in several important ways. First, data from the present study revealed that single-gender classes provided a positive learning environment for both female and male students at the elementary school level. Much research has been conducted and has produced results supporting both sides throughout the past 30 years. During the 1990s, researchers found that single-gender schools had a positive impact across the board for adolescent females and males academically and/or socially (Mael, 1998). In his study Riordan (2002) found that single-gender schools' benefits are applicable across all historically disenfranchised groups, primarily women, ethnic minorities, and low-income students. Other researchers

(e.g., Lee & Bryk, 1986) believed that having peers exclusively of the same sex would increase students' focus on academics, as there would be fewer social diversions in the classroom. These researchers feel this would create an emphasis on schoolwork and other school related activities would alleviate pressure from the opposite sex to fill certain stereotypes and create more students willing to take on leadership roles. These researchers studied 75 Catholic high schools in Chicago, Illinois, 45 of which were single-sex institutions.

Second, the data further revealed that single-gender classes removed the largest distractions and allowed students to concentrate more on their work at the elementary school level. Those favoring single-gender schools continue by stating that having only one gender in a classroom reduces the number of distractions for students and allows them to avoid intensified anxiety or intimidation caused by the presence of the opposite gender at the secondary level (Lee & Marks, 1990). Hubbard & Datnow (2005) found that single-gender classrooms do limit learning distractions for poor and minority students, as these classrooms provide a safe haven and a nurturing environment developed through the establishment of positive peer-to-peer and peer-to-teacher relationships at the middle and high school level. African American males especially benefit from a more focused learning environment (Hopkins, 1997), which enhances the opportunity for more order and structure due to limited distractions from members of the opposite sex.

Third, single-gender classes afforded females the opportunity to ask questions when they did not understand a mathematics skill. As a result, they were apt to engage in mathematics classes. According to Funk (2002), girls continue to lag behind their male

counterparts, especially in the areas of mathematics and science. Within the single-gender environment, the opportunity for girls to demonstrate knowledge in the areas of math and science was more readily addressed and realized in single-gender classrooms in the school where they did not have the added distraction of competing with males for teacher attention and could take learning risks that were associated with leadership development and confidence in the math and science subject areas.

Sadker and Sadker (1994) found that 163 adolescent girls were less engaged in classroom discourse and activities when in math and science classes due to lowered confidence levels and a lack of positive female identity development as they compete with boys in male dominated classrooms, thus resulting in females developing important skills in a subject area that has been dominated by males. The all-female classrooms provided an academic benefit to girls as they were less concerned about what they wore or what boys were doing or thinking, and this translated into enhanced opportunities for girls to engage in classroom leadership at a critical time when female adolescents often show a declining self-esteem and self-confidence in schools (AAUW, 1992; 1998).

These opportunities further the cause of gender equity in the school as girls are given opportunities to develop positive identity development and self confidence as their unique learning styles are addressed on a daily basis through the single gender classroom arrangement. The silencing of the female voice (Gilligan, 1982; Streitmatter, 1999) in co-educational classrooms is directly correlated to male dominated classrooms where female students feel disempowered and therefore they disengage in the learning processes. During this critical stage of development, giving females a platform or structure from which to develop their own voice is critical to their own identity

development (Streitmatter, 1999) and their attitudinal approaches to school. Whereas the previous research has largely focused on the issue of silencing the female voice on co-educational classrooms, it is interesting to note that this issue occurred at the elementary school level, and that single-gender classes helped to address this issue.

Taken together, the present study showed that while these findings are in line with previous studies and research on single-gender studies in some areas, my findings extended to upper elementary schools, those elementary schools with a high ELL population, and Title I (economically disadvantaged) schools. This upper elementary setting is unique because it consists of grades 3-5, which has not been examined in previous research.

Conclusions

Sax (2008) responded to the nation's growth of single-gender classrooms by stating that we as a nation do not understand gender differences and regard it as politically incorrect to discuss it. As a result, schools are not helping students to reach their potential. We are unintentionally pushing girls out of computer science, and pushing boys out of subjects such as arts and languages (Chandler & Glod, 2008). Schools considering implementation of single-gender classes must be aware of the criteria to implement such a program. Justification of a program is more than putting boys in one room and girls in another. According to Pytel (2006), criteria for classes come with approval of some restrictions: must be geared toward improving achievement, must meet the needs of students, must treat male and female students equally, and must be enrolled on a volunteer basis. The NCLB (2002) insists that all students reach grade-level proficiency in reading and math by 2014.

Educators have been encouraged to try research-based strategies that are effective in increasing student achievement (NCLB, 2002). One-strategy researchers have identified is single-sex education (Friend, 2007; Hughes, 2006; Salomone, 2006; Whitmore, 2005). Amendments to Title IX regulations due to NCLB have begun to allow public schools to test single-sex education practices (Salomone, 2006).

The findings of this study are consistent with previous studies that demonstrated that single-gender grouping may make a positive difference in student engagement and achievement especially among females (Black, 1998; Schachter, 2003; Younger & Warrington, 2002). Many teachers and parents in this study, like Black (1998) and Robinson and Smithers (1999), reported that undesirable behaviors decreased because of the removal of distractions and the motivation to perform for the opposite sex.

There were some students who initially believed that they were being socially deprived by not being in school with girls, similar to the findings by Robinson & Smithers (1999). However, findings by Hagg (2000), Maslen (2001) and Sommers (2001) support the perceptions of many parents and teachers of this study that separating students according to gender has a positive impact on academics (Hagg, 2000; Maslen, 2001; Sommers, 2001). Other researchers have also had findings that are consistent with the views of the participants in this study that single-gender classes have helped to modify the attitudes of students (Brutsaert & Bracke, 1994; Smith, 1996; National Coalition of Girls' Schools, 1999; James & Richards, 2003).

Traditionally, single-gender schools have been implemented to provide higher quality education as many middle/upper class parents preferred to have their daughters protected from having to mingle with boys in the public schools. These parents enrolled

their daughters in single-gender institutions to achieve this goal and to enhance their avenues for academic success (Kaminer, 1998). In this study the focus of the move to separate the sexes for instruction has shifted from the benefits of single-gender classes for females to the benefits for all underachieving students (Jackson, 2002). As Cathy Young (2002) observed, there are clear educational problems that disproportionately affect male students, and many of these students can benefit from participation in a single-gender class.

Given that the present study is the first to obtain the perspectives from teachers, students, and parents with the initial year of implementing single-gender classrooms at the upper elementary school level. This study could contribute to significant positive social change in several ways. It will provide administrators of Title I schools with information to determine if single-gender classes should be implemented. This could encourage changing the norm of the coeducational learning environment to one that more specifically meets the needs of both genders in a single-gender environment. Additionally, the perspectives of teachers, students, and parents could encourage single-gender classrooms in other parts of the school district whose demographics are similar.

Limitations and Recommendations for Future Research

This study was confined to the 2008-2009 school year. The study was limited to one upper elementary school. The study was also limited to third, fourth, and fifth grades. Therefore, the application of findings was somewhat limited to students of similar age and similar demographics in this pilot year of implementation. The academic achievement level of students was not included in this research. In addition, this study was limited as a result of using open-ended survey questions to elicit qualitative data.

1. It is recommended that the single-gender classes have continued for another school year in order to more thoroughly assess the long-term effects of student suspensions, corporal punishment, alternative school referrals, firearm possession, student attendance, and student achievement.
2. Additional investigation would enhance the information obtained from the research. For example, it would be important to incorporate classroom observations as well as interviews and questionnaires from students, parents, teachers, principal, assistant principal, and school counselor.
3. Using the aforementioned tools, further inquiry could also help determine the specific instructional support resources, which should be used in single-gender classes and how these might impact student performance. These factors for inquiry include: the use of differentiated materials, focused professional development, specific reading and math learning activities, curriculum resources, and teaching strategies for single-gender classrooms.
4. Also research should be examined in light of the impact of single-gender classes on the Mississippi Curriculum Test 2 scores. In addition, sub groups within the sample (Black, Hispanic, White, Asian, and those with individualized education plans) should be examined to measure their achievement in single-gender classes compared to their co-educational counterparts.
5. Determining how students and teachers were selected for the single-gender classes and how the classroom learning environments were structured are factors that the researcher recommends are worthy of investigation.

Furthermore, the concept of stakeholder choice for single-gender classes, including whether or not teachers, parents, and students were given input regarding participation in a single-gender verses co-educational classroom, should be explored. Woods and Dylinski (2002) argued the importance of parental involvement in a child's education. Sax (2008) suggested that putting a teacher in a single-gender classroom for which she is not suited by temperament or training, may be a recipe for failure.

Recommendations for Practices

It is recommended that school leaders of Title I public elementary schools consider involving stakeholders in the decision-making process about whether or not single-gender class structure should be implemented. The researcher also recommends that students, parents, and teachers have a choice in whether or not they participate in the single-gender class initiative. Having parents who make "a pro-academic choice" will only increase the probability for success (Weil, 2008). Spielhagan (2008) suggested that schools must involve parents in decision-making about single-gender classes. Moreover, students who opt for single-gender classes may benefit from the arrangement simply because they chose it.

The results of the study also compel school leaders and teachers to examine the instructional strategies designed to support male and female preferred learning styles. Classroom learning environments should be examined to identify how they might support the interests of males and females based on an examination of preferred learning styles. Sax (2008) and Gurian (2008) contended that research that supports that male and female students learn in different ways according to brain chemistry is valuable information for educators. Sax (2007) found that public schools, which offer all-boy classes, where the

format for learning is varied to accommodate for brain-sex differences, have a higher success rate in engaging male students in reading (Sax, 2007).

Spielhagan (2008) asserted that single-gender classes seem to be most effective when related to the developmental needs of the students. She believes that the younger the student, the more probable that they will have a positive experience in a single-gender class. Moreover, Spielhagan (2008) retorted that simply grouping students by sex would not automatically result in higher achievement. Furthermore, she stated that educators must understand training for single-gender education takes place over time (Spielhagan, 2008).

Leonard Sax (2005), founder of the NASSPE and a leading advocate for public single-gender schooling, maintained that professional development seems to be a critical component in single-gender classroom success. Sax noted "At schools where single-gender classrooms were not effective, teachers received no specific training in best practices for gender- specific teaching" (p. 34). The researcher recommends the following resources to be utilized in the professional development of teachers who teacher in a single-gender classroom or dual academy school: *Successful Single-gender Classrooms: A Practical Guide to Teaching Boys and Girls Separately* (Gurian, Stevens, & Daniels, 2009); *The Silent Gender Gap,* an article in Education Week (Riordan, 1999); and *Why Gender Matters: What Parents and Teachers Need to Know About the Emerging Science of Sex Differences* (Sax, 2005).

Single-gender professional learning communities could be developed to afford teachers opportunities to dialogue about ideas and instructional strategies, which foster engagement of the sexes in the curriculum. The authors of *Professional Learning*

Communities at Work (2008, as cited in DuFour & Eaker, 1998) stated, "To achieve this shared purpose, the members of a professional learning community create and are guided by a clear and compelling vision of what their schools and districts must become to help students learn" (p. 89).

School-based administrators should be made aware of the federal guidelines regarding the implementation of a single-gender program in a public school setting. Protheroe (2009) emphasized the importance of effective planning for the implementation of a single-gender program. "Any program will need to satisfy the guidelines outlined in the 2006 version of the federal regulations" (p. 34).

It is vital that additional study and collection of data be conducted to further the existing knowledge base related to the benefits of single-gender or co-educational classrooms. Single-gender classrooms may be a vital option for school administrators to consider in addressing the momentous task of raising student achievement levels, student attendance, classroom engagement, and classroom discipline in schools serving the economically disadvantaged student population, while mitigating the educational equity and cultural identity issues related to students. We must leave no stone unturned, and no reform unutilized in trying to help those who need us the most.

This researcher has determined that no final and definitive conclusions can be drawn about the academic performance of students enrolled in single-gender classes from this research alone. However, the findings in this study revealed single-gender classrooms provided a positive learning environment for students at the elementary school level. It allowed students to be more productive, removed the largest distractions for male and female students, and allowed them to concentrate on their schoolwork. In

addition, the data revealed that single-gender classrooms had a positive impact on girls in terms of feeling comfortable enough to ask questions when they did not understand something. Also girls were given opportunities to develop leadership through taking initiative in a subject area that has been historically male dominated.

Single-gender classroom environment served as a structured, focused, and consistent environment for males. Single-gender classes had more of an impact on suspensions for females than for males. Males showed a minimal decrease in suspensions, whereas, females showed a significant decrease in suspensions. There was a reduction of corporal punishment among males during the initial year of implementation.

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APPENDIX A

LETTER TO PARENTS

April 1, 2008

Dear Parents:

I am a doctoral student in the Department of Educational Leadership at Mississippi State University. As a part of my degree program, I am conducting a research study on the single-gender classes. My research will involve a open-ended survey for teachers and students in the school setting during the 2008-2009 school year. I will also solicit parent input during the year. This is a new experience for all of us and I want to document how it impacts the students, the teachers, parents, and the school.

I will examine the students' records for age, gender, attendance, grades, and performance. There will be no risk involved for your child; no interference with the educational process; and no personal identification beyond the fact that your child is a male or a female student in a single-gender classroom.

It is the policy of Mississippi State University for researchers to secure parental permission when student information is used for the purpose of research. If this is acceptable to you, please sign the attached consent form and return it with your child as soon as possible. No penalty will occur as a result of either not participating or withdrawing at any time.

Thank you for helping me to fulfill my goal of becoming a doctoral candidate. If you have any questions or concerns about my research project feel free to call me at 555-555-5555 (cellular).

Sincerely,

Pamela Reed, Assistant Principal

APPENDIX B

TEACHER SURVEY QUESTIONS

SUBJECT: SINGLE-GENDER CLASSES

Script: Thank you for talking with me about your teaching experience in an all-male/all-female classroom this year. I am in graduate school at Mississippi State University working toward a doctorate, and I have chosen to do a research study on the single-gender classes at your school. I want to try to determine the impact that dividing the males and females might have on the educational experience. Would you be willing to answer a few questions for me? _____

You will not be identified in any way in the report of my findings beyond teacher of females or teacher of males. What you say is confidential. I may use some of your comments or opinions for the purpose of reporting results, but there is no risk or penalty to you. You may stop the survey at any time or decline to comment on any question you choose.

1. Where else have you encountered teaching in a single-gender environment?
2. Did you have any input in the decision to teach a single-gender class this year?
3. Were you offered any particular training or staff development to prepare you for a single-gender class?
4. What preparations did you make specifically to teach a single-gender class?
5. Generally speaking, how is the school year going for you as a teacher?
6. What difficulties are you encountering related to an all-male/all-female class?

7. Have you had any positive or negative experiences that could be directly attributed to an all-male/all-female class?
8. How would you describe the atmosphere in your classroom this year?
9. How would you describe the level of productivity or enthusiasm in the class?
10. How would you describe your relationship with the students?
11. What kinds of reactions have you received from the parents concerning the single-gender classes? Is there a dominant theme or feeling? What reactions have you received from the community at large?
12. What kind of reactions have you received from other teachers? Has this new class structure affected your relationship with others teachers in the building or in the district?
13. What method of discipline or classroom management do you use? Is this any different to managing a mixed-gender class?
14. Do you perceive any difference in your teaching methodology this year as compared to a mixed-gender class?
15. Do you perceive differences in the way you structure the classroom? Assignments, projects, grouping, etc.?
16. Are you satisfied with your level of expertise on single-gender education?
17. At this point in the year, do you think single-gender classrooms are a good idea or a bad idea or are you waiting to see? Why?
18. If you had a choice would you choose a single-gender class again?
19. Would you recommend it to other teachers? _____ Parents? _____

Script: Thank you for talking with me. I am really interested in knowing your opinions about all-male/all-female classes this year. You have been very helpful. Please remember I will not identify you in any way in my report of findings other than as a teacher of females/males and there is no risk or penalty to you. Thanks again.

APPENDIX C

STUDENT SURVEY QUESTIONS

SUBJECT: SINGLE-GENDER CLASSES

Script: Would you talk to me about what it is like to be in an all-male/all-female classroom this year? I am in graduate school at Mississippi State University working toward a doctorate, and I am doing a research study on the all-male/all-female classes your school. Would you be willing to answer a few questions for me? _____

You will only be identified in my report as a female or a male. What you say is confidential. I may use some of your answers in my report, but you will not get in trouble or get graded on your answers. You may stop talking with me at anytime or just not answer any question you choose. Is that okay with you?

1. Male _____ Female _____
2. What is your favorite subject this year? Why?
3. How would you describe your work habits on homework and in class this year compared to last year?
4. (Males) Have you ever had a male teacher before? What is it like?
5. How would you describe your relationship with the teacher?
6. Is there anything different about the way students behave in class with no males/females?
7. What is your favorite class activity?
8. Does your teacher seem to teach any different this year from your other teachers?
9. Tell me what you like best about being in a class with all-male/all-female?

10. Is there anything you do not like about an all-male/all-female class?

11. What do other students say about your all-male/all-female class?

12. How do you think your parents feel about the all-male/all-female class?

13. Do you have any questions that you would like the teacher of the principal to answer about the all-male/all-female classes?

14. If you had a choice would you choose an all-male/all-female class again?

YES _____ NO _____

Script: Thank you for talking with me. I am really interested in knowing your opinions about all-male/all-female classes this year. You have been very helpful. Please remember, what we have talked about is just to help me report about the new program, not to tell on you or get you in trouble in anyway. Thanks again.

APPENDIX D

PARENT SURVEY QUESTIONS

SUBJECT: SINGLE-GENDER CLASSES

Script: Thank you for talking with me about your child's experience in an all-male/all-female classroom this year. I am in graduate school at Mississippi State University working toward a doctorate, and I have chosen to do a research study on the single-gender classes at your child's school. I want to try to determine the impact that dividing the males and females might have on the educational experience. Would you be willing to answer a few questions for me? _____

You will not be identified in any way in the report of my findings beyond parent of a female or parent of male. What you say is confidential. I may use some of your comments or opinions for the purpose of reporting results, but there is no risk or penalty to you. You may stop the survey at any time or decline to comment on any question you choose.

1. Is your child is a male or a female? _____
2. As a parent, what is your impression of the school year thus far? Can you tell me why?
3. What difficulties have you encountered related to an all-male/all-female class?
4. How would you describe your child's overall satisfaction with school this year?
5. How would you describe his or her level of productivity or enthusiasm for school?

6. How would you describe his or her relationship with the teacher?
7. How is your child being taught this year as compared to last year?
8. How is the teacher managing the classroom? Assignments, discipline, etc.?
9. What unanswered questions would you like the teacher or the principal to address?
10. If you had a choice would you choose a single-gender class again? Why?

Script: Thank you for talking with me. I am really interested in knowing your opinions about all-male/all-female classes this year. You have been very helpful. Please remember I will not identify you in any way in my report findings and there is no risk or penalty to your child. Thanks again.

APPENDIX E

INSTITUTIONAL REVIEW BOARD OF MISSISSIPPI

STATE UNIVERSITY APPROVAL LETTER

Office of Regulatory Compliance
[illegible]

February 9, 2009

Pamela Reed
P.O. Box 13161
Jackson, MS 39236

RE: IRB Study #08-320: Single-Gender Classrooms and the Impact on Academic Achievement of Elementary School Students at a Mississippi School

Dear Ms. Reed:

The above referenced project was reviewed and approved via administrative review on 2/9/2009 in accordance with 45 CFR 46.101(b)(1). Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. These changes will be posted online at http://www.orc.msstate.edu/human/aahrpp.php. The first of these changes is the implementation of an approval stamp for consent forms. The approval stamp will assist in ensuring the IRB approved version of the consent form is used in the actual conduct of research. You must use copies of the stamped consent form for obtaining consent from participants.

Please refer to your IRB number (#08-320) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at cwilliams@research.msstate.edu or call 662-325-5220.

Sincerely,

Christine Williams
IRB Compliance Administrator

cc: Jerry Mathews